Supply Manager's Role Development
In Industrial Supply Chain Process

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ABSTRACT

Today, supply chain business world has moved to integration into business processes, after decades of evolution of supply chain, from creation, integration, globalization, specialization. For competition, the trend has become a driving force for developing core business processes in supply chain organizations to achieve competitive advantage and role' s competence among the same industry competitors.

The thesis theme is for developing supply manager's role in business process for the research organization. The insight is via problems analysis and gaps mapping leveraging through core business processes, where supply manager plays a critical role, to make development proposals on supply manager's role for the research organization management.

The research work consists of mainly three parts: theory, empirical analysis and development proposals. Theories are related with integration issues of frontline and supply line and supply chain integration into core business processes. Empirical analysis is conducted by interview and value stream mapping, qualitative research. Both change strategy and lean approach have gone through the development analysis, gaps mapping and results concluding. As results, it is found out that the main problems are waste of time, inefficiency, non-customer focus with supply manager's role in core business processes: organization, process, technology management and project management. More than that, the development proposals will be very beneficial for supply manager's role development to assure lead time and quality, and to create customer value and competence.

Keywords Competence, Customer Value, Supply chain globalization, Specialization as a service, Integration into business processes, project management

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TIIVISTELMÄ

Nykyään, toimitusketju liike-elämässä on siirtynyt integroitumista liiketoimintaprosesseihin, vuosikymmeniä kestäneen kehityksen toimitusketjun luominen, integraatio, globalisaatio, erikoistuminen. Kilpailu on ajanut toimitusketjun organisaatiot ydinliiketoiminnan kehittämiseen saavuttaakseen kilpailuetua ja oman paikan markkinoilla.

Opinnäytetyön aiheena on kehittää supply managerin rooliin tutkimusorganisaation prosesseissa. Näkökulmana on ongelma-analyysit ja puutteiden kartoitus ydin prosesseista. Supply manager on keskeisessä asemassa, kun kehitetään Supply managerin roolia tutkimusorganisaatiossa.

Tutkimustyö koostuu pääasiassa kolmesta osasta: teoriasta, empiirisestä analyysista sekä kehittämisehdotuksista. Teoriat liittyvät integraation ongelmiin frontlinessa ja supplylinessa sekä toimitusketjun integraatioon ydinprosesseihin. Analyysi toteutetaan haastattelemalla ja arvovirtakuvauksen kartoituksella, kvalitatiivisella tutkimuksella. Muutosstrategia ja Lean lähestymistapa ovat käyneet läpi kehityksen analyysin, ongelmien kartoituksen ja tuloksien johtopäätökset. Tuloksena on todettu, että suurimmat ongelmat ovat ajan hukka, tehottomuus, ei-asiakaslähtöisyys Supply managerin roolissa seuraavissa ydinprosesseissa; Organisaatio, prosessi, teknologian hallinta ja projektinhallinta. Lisäksi kehitysehdotukset tuovat lisäarvoa läpimenoaikaan, laatuun, asiakkaan arvoon sekä osaamiseen Supply managerin roolin kehittämisessä.

Avainsanat Osaaminen, asiakas-arvo, toimitusketjun globalisaatio, erikoistuminen palveluna, liiketoimintaprosessien integraatio, projektinhallinta

Sivut 83 s. + liitteet 12 s.

CONTENTS

1 INTRODUCTION

1.1 Background

The business world has been going to global since 1960, which also challenged organizations to make changes with their global business operation model in order to drive for competitive advantages with cross cultural environment.

According to Porter's competitive strategy 1980, the existence of comparative advantage is a classic determinant of global competition. When a country or countries have significant advantages in factor cost or factor quality used in producing a product, these countries will be the sites of production and exports will flow to other parts of the world. In such industries, the strategic position of the global firm in those countries possessing a comparative advantage is crucial to its world position (Porter 1980, 278).

Today, many traditional manufacturing firms are focusing on their service operations, which are often seen as a better source of revenue that the first-time installations. The information and communication technology (ICT) can accelerate this process by offering efficient ways to delivery services to the customers and by allowing companies to transfer their traditional product strategies to service (Penttinen 2007, 117).

Supply chain has also transferred to the service world, and specialization within the supply chain as a service began in the 1980s. Beyond transportation and logistics supply chain has matured into aspects of supply planning, collaboration, execution, and performance management.

Supply chain as a service is a kind of transform from producing and delivering a product to the customer base service, which will integrate among business, seller, product, technology, logistic and the customers. This will ensure the lead time, quality, value add and best services to the customers and for competence.

According to Blanchard, the increasing sophistication of supply chains – spanning corporate departments and global boundaries – has made it imperative that supply chain professionals thin far beyond the four walls of their companies. At a strategic level, this requires a close study of every tasks, process, and operation within a company's extended enterprise. (Blanchard 2010, 150.)

The beauty of business is that it does not just have one single community; as organizations we are made up of our people, our suppliers and our customers. The businesses that are most successful connect with everyone as an individual, not just as an order number or a transaction. There have been many pioneers in this area who have successfully built communities and mobilized them to act (Branson 2011, 299).

According to Grönroos 2007, the status of most employees in service operations is complicated. They have dual responsibilities, they should concentrate on their key expertise, but at the same time they should realize and carry out their influences to the customers of the organization directly or indirectly.

Supply managers and key stakeholders of the organization have been facing challenges in many aspects in the supply chain excellence for customer value and competence.

1.2 Research purpose

This paper is about supply manager's role development for the research organization, a global supply chain organization. Via the study and by change strategy and lean approach, the author will finally issue development proposals for the management team on supply manager's role.

The research organization is a newly established supply chain organization in 2010, with business operation in Finland, China and the US, a fast growing global supply chain organization supplying elevators and escalators all over the world. However, there are many competence problems in the new organization for the business target, mainly in core business competence areas: organization, technology, processes and project management. Supply manager is a crucial role for business core competences, a driving force for a successful full supply chain, value creation and customer satisfaction and for competence eventually.

Supply manager's role development is meant to crystalize the core roles and eliminate the wastes of non-core roles or re-organize them in order to ensure lead time, quality, customer value and competence.

It is a fundamental concept of supply chain management that you cannot coordinate business functions across companies within the supply chain if you cannot do this coordination first within your own company (Mentzer 2004, 29).

1.3 Research scope and key words

This research is conducted on supply manager's role development for a newly established global supply chain organization, including business operation unit of Finland, and branches China and US, and Finland is the main focus. It has a project supply handbook, the research will not go to the detailed role description, rather, to identify and analyze key problems, to highlight supply manager's core role and propose to remove the non-core role, define competence and customer value by focusing on the research organization supply chain business core competences: organization, technology, processes and project management. Detailed issues on tools will not be addressed here even though there might be some general issues mentioned.

Implication: Organizations are now more complex and sophisticated than ever before. Change is becoming a dominating feature of organizational lift. Adaptability and flexibility are the essential characteristics for survival and success. As a consequence, organizations are now espousing values that regard people, not as costs to be minimized but as assets to be maintained and developed (Beardwell and Holden 1997, 409).

Based on the interview, organization is one of the top problems on supply manager role development.

Key words: competence, customer value, supply chain globalization, specialization as a service; business process integration

Competence: is a resource capable of doing things. Competence can be also defined as a collection of skills taken together to achieve desired tasks. It can and should be cultivated by investing in the people.

Customer value: whatever the customer says and is willing to pay a company the goods or services delivered. Therefore, customer value is not only the product but also the service embedded in the product delivered to the customer.

Supply chain globalization: Supply chain is a system of organizations, people, activities, information, and resources involved in delivering a product or service from supplier to customer. Supply chain globalization can be characterized to global systems of supplier relationships and the expansion of supply chains over national boundaries.

Specialization as a service: focus on the core competences and specific networks, best-in-class partners to contribute to the overall value chain, and for efficiency, also it means a kind of service delivery embedded in products.

Business processes integration: integrate individual functions and activities into key supply chain processes. Supply chain business process integration involves collaborations between buyers and suppliers, joint product development, common systems, and shared information.

1.4 Structure of the thesis

Chapter one describes the background of supply chain evolution by different era and now in integration business process time, which challenged the supply chain organizations to develop their process, and core business processes for competitive advantage and make supply chain excellence, also challenged supply chain of the research organization.

Chapter two then gives a glance at frame work of the thesis from theoretical level, also empirical relevance and the author argued about the problems of the research organization and figure out a big picture for the key elements for developing supply manager's role, also the implications for change strategy especially with the organization strategy.

Chapter three launches the goals for supply manager's role development for lead time, quality, customer value and competence in supply chain excellence.

Chapter four is about the description of how the author conducted the data collection and data analysis, which actually the qualitative method is executed by interview and value stream mapping. The author also compared the two methods to get the insights of the analysis into a higher level and with deeper implications.

The interview data was validated during thesis data collection phase by target group supply managers, so as for validity and compatible for thesis writing. Value stream mapping is a case study on one supply project of the research organization, which is a live data tracking from SAP system (ERP) enterprise resource planning and empirical work together with the supply manager of the project.

Chapter five is the thesis core part, data analysis and results. The author made both statistics analysis and data analysis and also value stream mapping analysis, as well as the results from all the analysis from proved figures and empirical team work. The author did the analysis according to also the corporation empirical theory of supply chain process and in a logical manner.

Chapter six is discussed about the value creation, meaning and benefits between shareholders and stakeholders, ethical issues. It also describes the reliability and validity of the thesis data and the further research aspects.

Chapter seven tells the development proposals for the research organization. In this chapter, the proposals are categorized and prioritized by business strategy and the key elements of supply chain excellence. Based on the studied problems of supply manager's role, the development proposals are practical and change driven and valuable for the research organization management to make decisions for competence and customer value. In this chapter where is also addressed the limitations and further research of the thesis topic.

Chapter eight concludes the major development proposals for the research organization management, highlights competence, customer value for supply chain excellence. The answer from supply managers for development after the interviews is GO.

1.5 The research organization

The research corporation is one of the global suppliers in elevator and escalator industry, with leading elevators, escalators, and automatic building doors, as well as innovative solutions for modernization and maintenance. KONE is specialized in residential elevators. The research organization does large scale such as such as skyscrapers, stadiums, airports and transit centers to deliver the best People Flow™ experience. According to the re-

search corporation Corporate Responsibility Report, its objective is to offer the best People Flow experience by developing and delivering solutions that enable people to move smoothly, safely in buildings within a rapidly urbanizing environment.

In 2012, the research corporation had annual net sales of EUR 6.3 billion and approximately 40,000 employees. Its class B shares are listed on the NASDAQ OMX Helsinki Ltd.

The whole corporation serves more than 400,000 customers across the globe, and the majority of them are maintenance customers.

The research organization is one unit of New Equipment Business of the corporation in elevator industry since 2010. In supply line, it has 170 employees in Finland, and 82 in China and 20 in the US branches and its business scopes are elevators and escalators of mainland, as well as modernization and Marine business globally. For the organization chart, please see Appendix 7.

The business strategy for the year 2013-2015 is one billion EUR order and increase profit to 18%, its' business scope has developed globally tremendously for the past few years, which also demands an operation model excellence to meet the new challenges and for competence, especially target the goal being the number one in the year 2015.

There is a strong need for change in such kind of global and fast growing organization, and operation model development becomes an enormous and must go issue for business operation efficiency and competence, as well as continuous development in the future. Change strategy and lean approach will lead the supply chain excellence results for lead time, quality, customer value and competence.

1.5.1 The vision and strategy

The research organization fulfills the same strategy and goals in practice by the vision and strategy of the whole corporation.

The vision is to deliver the best People Flow experience.

The strategy is to deliver a performance edge to its customers by creating the best user experience with innovative People Flow solutions.

Simultaneously, the corporation people leadership and processes enable operational excellence and cost competitiveness.

The values are:

- Delighting the Customer
- Energy for Renewal
- Passion for Performance
- Winning Together.

The way of doing business

The way of doing business is the relationship with the customers, the delivery of our products and services, the maintenance of elevators, escalators, the creation of new solutions and the management and support of these processes. As such, the processes are deeply embedded in the corporation policies, systems and tools.

The aim of doing business is to become a truly global company, delivering a consistent experience to customers all around the world. Implementing the way of doing business globally will remove overlaps in different process areas. This furthers productivity, clarifies responsibilities and emphasizes collaboration between different business functions.

The Story 2014-2016

According to the newly printed brochure, the corporation is continuously strengthening the basis for the competitiveness by developing the people and process.

The corporation differentiates by delivering the best user and customer experience with innovative People Flow® solutions.

New Must-Win Battles 2014-2016

The efforts are to challenge industry leadership, the definitions are:

- First in Customer Loyalty
- A Winning Team of True Professionals
- The Most Competitive people Flow® Solutions
- Preferred Maintenance Partner
- Top Modernization Provider.

Through these Must-Win Battles to reach industry leadership in customer loyalty while providing an energizing, inspiring and collaborative working environment for all the corporation employees. The solutions are to provide the best user experience, to ensure the best life cycle performance for customers' equipment, and also want to secure seamless and cost competitive deliveries.

2 FRAMEWORK

The framework of the research will be focusing on:

A. Supply chain management
A successful supply chain management means to drive for a supply chain excellence and competitiveness

B. Industrial supply chain strategy
- Change strategy and lean approach for competence and customer value.
- Understand strategy from supply chain key characteristics.
  - Supply chain globalization as a cross boarder challenge
  - Specialization as a service for customer focus
  - Integration into core business processes
  - Outsourcing as specialization for efficiency and lead time
  - Competence approach.

C. Supply chain integration into business processes
Supply chain key characteristics have been leveraged though supply manager's role development in core business processes: organization, process, technology and project management skills, tools and people. But tools development is excluded in this research and should be a separate development in the future.

D. Role's competence development in industrial supply chain
- Supply manager's role is crucial in supply chain.
- Other stakeholder's role development impacts on supply manager's role.

E. Competence approach
- In alignment with organization business strategy
- Responsibility of role is to be defined and re-defined
- Individual and organizational continuous training on role development
- Professional skills, outside organizational learning and lifelong learning
- Open to feedback for even better performances
- Customer focus and results driven on value creation
- Outsourcing tactic.

2.1 Supply chain management

Supply chain management definition
The process of planning, implementing and controlling efficient flow of raw materials, in-process inventory, finished goods and related information from point of origin to point of consumption, for the purpose of conforming to customer requirements (Bhatnagar 2009, 2).

The Supply Chain Research Group at the University of Tennessee (Mentzer, 2000) defined supply chain management as the systemic, strategic coordination of the traditional business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole. (Mentzer 2004, 4.)

A supply chain, boiled down to its basic elements, is the sequence of events and processes that take a product from dirt to dirt, in some cases literally. It encompasses a series of activities that people have engaged in since the dawn of commerce. A supply chain, in other words, extends from the original supplier of source to the ultimate customer. (Blanchard 2010, 6).

Also, successful supply chain management requires a change from managing individual functions to integrating activities into key supply chain processes. Information shared between partners of supply chain can only be fully leveraged through processes integration.

For a supply chain excellence, top-performing supply chains share these characteristics:

- They have a clear supply chain strategy as their foundation. This is based on a deep understanding of the company's business strategy.
- They are adaptable and quick, which allows them to compete in today's dynamic environment.
- They are transparent, have clearly state performance expectations, and have a culture of accountability to their customers.
- They are focused on continuous improvement throughout the supply chain and aim at peak-to-peak performance.
- They know their strengths and their weaknesses, and participate in benchmarking activities.
- They have an end-to-end perspective, focusing on the supply chain activities of plan-buy-make-move-store-sell.
- They have a global, rather than regional, focus.

In short, the best-run organizations have developed world-class supply chains that extend from their customers' customers to their suppliers' suppliers, and all points in between. (Blanchard 2010, 14.)

A successful supply chain management means to drive for competitive advantage throughout change, customer loyalty and efficient supply chain operation model and role competence.

2.2 Industrial supply chain strategy

Industrial supply chain strategies require a full view of the entities in the chain that work together efficiently to create customer satisfaction from initial sourcing supplier of raw material flow, in-process inventory till the finish product delivery to the end consumer.

Supply chain is a set of three or more companies directly linked by one or more of the upstream and downstream flows of products, services, finances, and information from a source to a customer. (Mentzer 2004, 4.)

Supply chain business process integration involves collaborative work between buyers and suppliers, product development, common systems and shared information.

Change strategy and lean approach are leveraging through the research of the industrial supply chain.

What does supply manager's role play in supply chain?

Operational roles are occupied by specialists. Each of them brings a core capability that combines with others to produce or to deliver the product that the end-user buys (Walters & Rainbird. 2004, 221).

Supply chain managers are crucial to the global economy. They represent a unique discipline responsible for supporting the global network of delivering products and services across the entire supply chain, from raw materials to end customers. Specifically, supply chain managers engage in the design, planning, execution, control, and supervision of supply chain activities with the objectives of creating customer value, building a competitive infrastructure, leveraging worldwide logistics, compromising supply with demand, and accomplishing performance globally.

Supply manager is a critical contact point between customer and frontline in supply chain excellence. He or she will coordinate, communicate and collaborate internally and externally, for information, process, and knowledge sharing and interacting for lead time, quality, customer value and competence.

Change management and lean approach

Changing the processes and organizational structures is a difficult task where many methods, tools and "isms" have been presented as the ultimate solution. Radical change, epitomized in business process reengineering (BPR), can be regarded as one of these. As the process movement has gained acceptance and experience, many success stories and failures have been reported. Reengineering and change management projects have included projects of wide variety, ranging from straightforward and narrow scoped (Emerald Insight Staff. 2004, 84).

Why change

Change Management is managing the process of implementing major changes in information technology, business processes, organizational structures and job assignments to reduce the risks and costs of change and optimize its benefits. (Murthy 2007, 29.)

There are two clear implications of change. The first is that intellectual capital - everything from patents and trademarks to software, technology and ideas - has become a key source of value. The second is an increasing

dependence within the organization on the people who generate that intellectual (Galavan, Murry & Markides 2008, 224.)

When we talk about change, it is related also people's change and people's competence development. Competence is a resource, which can and should be cultivated by investing in the people. Competence is subject to other too, social, knowledge, skills, also when other people measure the work. Competence can be also defined as a collection of skills together to achieve desired tasks.

When people in the organization are competent enough, they will create naturally more value to their customers.

The value proposition is defined as an implicit promise a company makes to its customers to deliver a particular combination of values. Each proposition searches for a unique value that can be delivered to a chosen market. Successful companies do not just add value, but they re-invent it (Walters & Rainbird. 2004, 252).

Lean supply

Our first stop across the lean supply chain takes us to the inputs that every organization relies on to succeed. Lean supply is one of the least recognized and pursued parts of a lean supply chain. There simply is not much written or available about this important topic. While suppliers can provide goods and services to any part of an organization, the primary focus here is on the direct materials that suppliers provide. The domain of lean supply includes selecting and then developing suppliers that practice lean principles; creating a physical supply network that features fewer suppliers providing more frequent deliveries of smaller quantities; and creating a supply organization that removes redundancy and waste from its supply management processes. (Trent 2008, 50.)

Empirical relevance and lean theory by the corporation

What does the initiative has to do with the supply chain. The short answer is everything. The lean's case means on production velocity and eliminating waste. Lean can help improve supply chain efficiency, and companies today are quick to take advantage of the approach throughout their organizations.

How to bring value to supply chain

First, what is value? Simply, it's whatever the customer says it is and is willing to pay a company to deliver whether goods or services. Lean says in order to measure value inhibitors, increase value and eliminate waste, we must construct a value stream map of the current state, create another map for the future that includes the same processes beyond to the ideal state: perfection. Without the waste, then devise an action plan to take us to that future state. (Supply Chain Planning & Collaboration, 2010.)

2.2.1 Organizational strategy on supply chain

Whatever its mission is, the effectiveness of an organization requires that it efficiently identify, analyze, solve, and cope with events or problems that arise within the operational environments. These are the classical functions of all organizations, and performance of them has always been critical for organizational success. It is clear now that functional proficiency and the integration of management and control systems play important roles in the performance of all organizations (Olmstead 2002, 14).

It is a fundamental concept of supply chain management that you cannot coordinate business functions across companies within the supply chain if you cannot do this coordination first within your own company (Mentzer. 2004, 29).

Integration is essential for organizational competence. The concept of organization that is presented is anchored squarely in Open Systems Theory; however, it also has roots in the social psychology of organizations. This makes it possible to incorporate, in a meaningful way, elements from many sources when it makes sense to do so. The concept of organizational integration is derived mainly from small-group theory and research and is also anchored in Open Systems Theory (Olmstead 2002, 137).

Firstly, the problem between **frontline and supply line** has been raised to the top list, because it is where the whole problem starts. They are not integrated as one unit financially, and both party just care about their own interest and benefit sharing. How about ensure and achieve lead time, quality and customer value. Many issues in real project work also shows the problem, unclear responsibility, either strict discipline or commitment. So integration could be one solution to unite the two partners together financially and sharing the benefits, efficiency and sailing for the same direction for customer value.

Supply manager is the first contact point between frontline, customer and supply line, the core role, which makes the communication and collaboration skills more demanding. Also from business process organization point of view, it is more complicated to manage the supply chain separately than a full integrated or better integrated one business unit between frontline and supply line.

When the question of developing an organization arises, there is a tendency to think only in terms of clearly enunciated policies and procedures, well-defined responsibilities for individuals and units, and smoothly functioning channels of authority and communication. In short, there is a tendency to think solely in terms of the machinery of efficiency rather than the dynamics of effectiveness. An organization needs a formal structure, with its concomitant procedures, in order to establish stability so that the activities of its personnel will be predictable (Olmstead 2002, 140-141).

Secondly, in the organization management, **role responsibility** has been also one of the most painful issues. Responsibility specific areas for each employee should be defined or re-defined. For the case organization, sup-

ply manager's role is mixed with supply engineer's, either key stakeholders role defined well and need to re-organize for efficiency, lead time and quality and customer value. Mover, key stakeholders role has great impact on supply manager's role, because their tasks are interacted and closely related. According to many interviewees, organization is one of the problems to be developed relating with supply manager's role.

Many people who are concerned with the performance of organizations consider effectiveness to be control over environment. Thus, an effective organization is a unified system equipped with the knowledge, skills, and resources to control its environments, while an ineffective organization, for the lack of such capabilities, remains subject to forces over which it can exert little control (Olmstead 2002, 140-141).

Discipline and commitment

Discipline is the rules and norms set up by the organization for its employees to follow for targeting its business goals. In the workplace it relates to training employees so they abide by the code of conduct (How to Maintain Discipline in the Workplace n.d.).

Inspiration motivates people to make a commitment to make things happen for a goal. Out of inspiration, it is a passion to take actions, which requires consistency of practice, and people refer to that as discipline.

In the research organization, it is complained that supply managers sometimes have to check, urge other's work done or even have to do other's tasks. There might be reasons of too busy and high work load, also might be employees are not competent enough for the tasks in professional knowledge, necessary trainings needed. Also because other departments have defined their responsibilities and that leads SM to do their work or whatever is left over to handle. One more strategy for discipline in workplace is that each team should define the role's responsibility and also the workload plan, and measurement metrics. Without rules, employees might be inclined to do whatever they want.

How then to have a positive reinforcement to get employees commitment to follow the discipline and rules.

Discipline Positive Reinforcement

An important element in positive discipline is positive reinforcement, which motivates your employees to comply with organizational protocols and standards. You might worry that being soft on your employees will encourage misbehavior, but rewards, bonuses, promotions and other types of positive reinforcement align employee interests with the company's, inspiring employees to work harder. (What Is Positive Discipline in the Workplace n.d.)

Next is the **communication and collaboration** problem because the research organization is a global organization, frontline and supply line is remote located mostly, which challenges the roles with cross boarder cultural management skills. 1/3 of the time spending on emails, phone call

tasks tell us already supply manager core role time using. Supply manager and project manager are located nearer with each other according to supply project different phase needs. Communication and collaboration skills are definitely required from a supply manager for role competence.

Job rotation for skills diversity internally and externally is also a great advantage for communication and collaboration, information and knowledge sharing. For the research organization case, there are certain job rotations ongoing to Asia, the US, but internal job rotation would be expected more like supply manager also does tender tasks for a period of time to get to know the process and basic technics what tender world is about. On the other hand it is also good for role's skills development and motivation up leveling.

Beyond role responsibility define, the **operation model** is the performance assessment where roles play the tasks and how business processes go on daily basis for different individuals, groups, teams and units. The research organization has been operating in an inefficient model that has many unnecessary layers of leader. For example, tender team in tender phase, who is going to make the decision for target tender to earn time for tendering tasks and supply manager related involved earlier enough with the projects for lead time and quality. A manager must know how to integrate this system of activities and relationships so that conditions are most conducive to effective performance. Supply manager is a critical role in operational team on daily basis tasks, and it is worthwhile that the research organization would consider and make changes according to the business process needs. Therefore, it is questioned with a new supply team operation model by both Engineering and Delivery flow and Planning and Quality assurance flow to target efficiency, lead time, quality, customer value and supply manager's role development with the new model business environment.

Entrepreneurial opportunities you can create by deliberately reconfiguring your company's competences – the combination of skills, assets, and systems you use to compete - to change the business model for your existing business or to create a business model for an entirely new venture (Gunther 2000, 109).

2.3 Supply chain integration into business processes

In this paragraph, except the organizational problem, there will the main problems concentrating on the research organization core business processes: organization, process, technology and project management skills.

Globalization and specialization for customer value have been the challenges for global supply chain, cross boarder and cultural issues demand communication and collaboration, process and information linkage as well as knowledge sharing and provide the best service required by the customer.

CRM is first and foremost a business strategy, one that helps a company tighten its business practices across organizations while forging an iron-clad connection with its customers (Dyche 2002, 18).

From supply chain globalization and specialization to business process, they have integrated by communication and collaboration between buyers and suppliers, joint product development, common systems, and shared information.

Beyond globalization and specialization, supply chain management (SCM) meaning has deepened into the evolution of processes, methods, and tools to manage them also by integration among them already starting from 21th century.

A holistic approach to process design, which emphasizes the unity of the process and considers the interactions between different unit operations, rather than optimizing them separately, this can also be called integrated process design.

Business process integration

Supply chain business process integration is meant for communication and collaboration between buyers and suppliers, joint product development, common systems, and shared information. Operating an integrated supply chain requires a continuous information flow. Mainly in organization strategy and management style, customer relationship management, product development and commercialization, supply project management skills, manufacturing flow management; supply relationship.

Best-in-class companies have similar key characteristics over the world:

- Internal and external communication & collaboration
- Initiatives to reduce lead time and ensure quality
- Open to feedback from customer and tighten upon market demand
- Customer focus for customer value
- Competence.

From theory to the research organization real business world, **process** is simply a question for employees to understand and follow, is it difficult to make change? One example, there a big gap between theory and practice in processes, they are not in alignment. In project start-up phase, how could project manager even don't know, neither organize start-up meeting which is compulsory for every project. In tender phase the problem is very obvious whatever the reason is behind, an order started in house already before any tender done. Because of the incorrect process with tender, supply manager has to do a lot of work to clarify the pricing issues with front-line and customer in order phase, which is just a waste in process, inefficiency. Let's then talk about sourcing and quality. According to the process requirement, every project should have a SLQ and CTQ plan for quality, sourcing control, but the target by 100% is not achieved.

In **organization**, unclear role's responsibility, not strict discipline and lack of commitment, inefficient supply team operational model, all the problems caused role's incompetent, work inefficient, unclear business goals,

non-customer focused. In MP, the operational model is based on business areas: customer solutions from sales support, tender, supply, layout design, and joint operations with SOF on listing and engineering, material management, sourcing and logistics. For the roles responsibility of key stakeholders, please refer to chapter 5.2.4 for details.

In **technology**, the research organization is all the time facing the challenges on how to do the input data for listing engineers and engineering work to follow. Technical solution engineers are to be searched for the special solutions upon customer's demand. Does the technical support role even exist or is he competent enough since nobody knows everything? Are the layout designers competent enough for the technical demands? Trainings or organizing layout school required. How about resources for chief designers, are they covering the demands involving with every project, even though they are not doing the daily tasks anyway except the difficult technical issues or coordinate between the research organization and visual design with other units in the whole corporation or layout team and other teams internally.

Let's move on from supply chain to **project management skills**, which is more supply manager's role related and the skills, which is crucial to ensure lead time, quality and customer value in supply chain. Since supply managers manage project in the supply chain, the most basic project management skills required from a supply manager by fundamental, professional and occupational skills: planning and organizing, communication and collaboration, problems analyzing and solving, technology, time managing, customer focused, financial skills, information technology, risk management, supplier knowledge, creativity, leadership and others. For E&S business process of the research organization and sales funnel and S-Plan, please refer to Appendix 6.

Customer value will be certainly increased with the role's competence through the core business processes development. The author also did the interviews on the research organization supply manager's role competence aspects.

From project management skills to role's **competence**, the supply manager's role competence in supply chain is going to be explored in the next chapter. For conceptual understanding of competence and customer value leveraging throughout supply chain core business processes, please see Appendix 4.

2.4 Supply manager's role professional development

The main gaps for supply manager's role development could be classified in core business processes: organization, process, technology challenges and project management skills. The related are organizational strategy and effectiveness, globalization as a cross boarder challenge, specialization as a service and integration into core business processes and components management in supply chain. Specialization as a service could mean for example, customer's ever change special requirements are fulfilled as a

service. The goal for professional development is to assure lead time, quality, customer value and competence through change strategy and lean management.

Other key stakeholders' role should also be developed since they have great impacts on supply manager's role in supply chain.

2.4.1 What are supply manager's role and responsibility

According to power point ACI - Continuous Improvement by Tero Salmela, the assorted main aspects for supply manager's role (tasks) are:

Customer service tasks (shared with Supply Service, KSS)

- Receive and coordinate FL orders in SL
- Check FL order technical feasibility (with support from engineering)
- Schedule, instruct and follow-up engineering work
- Follow up SL delivery until 3a manufacturing;

Project tasks

- Project management tasks
  - Participate meetings in FL premises (start-up, customer, follow-up, project closing meeting)
  - Schedule planning with PM (DGP, MS project)
  - Technical and design planning with PM
- Sourcing and Logistics tasks
  - Sourcing and related logistics arrangement planning
  - Special logistics coordination (Letter of Credit, air freight, direct delivery etc.)
  - China sourcing
  - Special material sourcing arrangements (with Sourcing Manager)
  - Special material pre-ordering and supplier Quotations(with Sourcing Manager)
- Financial tasks
  - SL transfer price management (material and engineering prices, variations, logistics fee and freight)
  - Foreign currency hedging with the Controller
  - SL cost & profit reporting (MPR)
- Quality assurance tasks
  - Quality planning and coordination in SL
  - Quality inspections (at supplier premises)
  - Quality assurance meetings and follow-up (SL start-up, Delivery quality review)
  - Customer Mock-up inspections
  - Material and component samples;

Technical tasks

- CAP tasks: documentation and risk analysis of elevator that do not fulfill EN81 or the model certification

- Documentation tasks
  - Project specific or additionally required documentation
  - Customer documentation/clarification creation
- Product development tasks
  - KTO new product piloting
  - Complex C-process solution creation coordination and arranging;

Tasks that are being done against all non-supported

- Project management
  - FL project management support
  - FL technical support on difficult solutions
  - FL documentation support (CSP, DGP, certificates,)
- Technical
  - Specification creation
  - Checking engineering drawings and documents
  - Maintenance and Installation instruction creation
  - Aligning project with KTO development work and schedule;

- **Everything** that is not supported by the research organizations.

The above lists actually describes in details the role and responsibility of a supply manager in a supply project. The tasks are classified mainly by customer service, project, technical and other unexpected. From here readers could get a picture of understanding a supply manager's role.

Moreover, as addressed in Project supply handbook of the research organization, role and responsibilities on supply manager:

- Supply manager (SM) ensures that supply project's engineering and deliveries are on time, profitable and meet customer specification. SM is responsible for providing competitive technical solutions within own projects for front lines and customers.
- SM is responsible that projects are up to date in order book (-SAP).
- Actively communicates with front line about project progress and especially about possible risks in deliveries from timing and solution point of view.
- SM is accountable for the proper documentation and reporting for the supply project.
- SM role starts latest when major project order is given and ends when FL project closing meeting has been held. The target is that SM has been in the loop already during tendering phase.
- Supply manager reports to own area manager.

These lists above are however a conclusion of a supply manager's role in a supply project and more in a conceptual way of addressing.

Also according to SUF open day presentation, the key issues for a supply manager in supply project are:

Engineering and Delivery flow
Supply manager plays its role NOT alone, rather, with other key stakeholders in the delivery interfaces of the research organization.

Quality and sourcing assurance flow
More than that, supply manager acts actively in key business functions especially in quality and sourcing by change management to ensure project quality by pre-planning, quality control and sourcing optimizing.

In a successful project delivery, the two aspects of flow are integrated and interrelated, otherwise cannot succeed fully without any part.

However, engineering flow would be the leading flow among these, because only by cutting edge technology and ever changing technical solutions upon customer's requirements, the research organization could then ensure delivery flow along with quality and sourcing assurance flow.

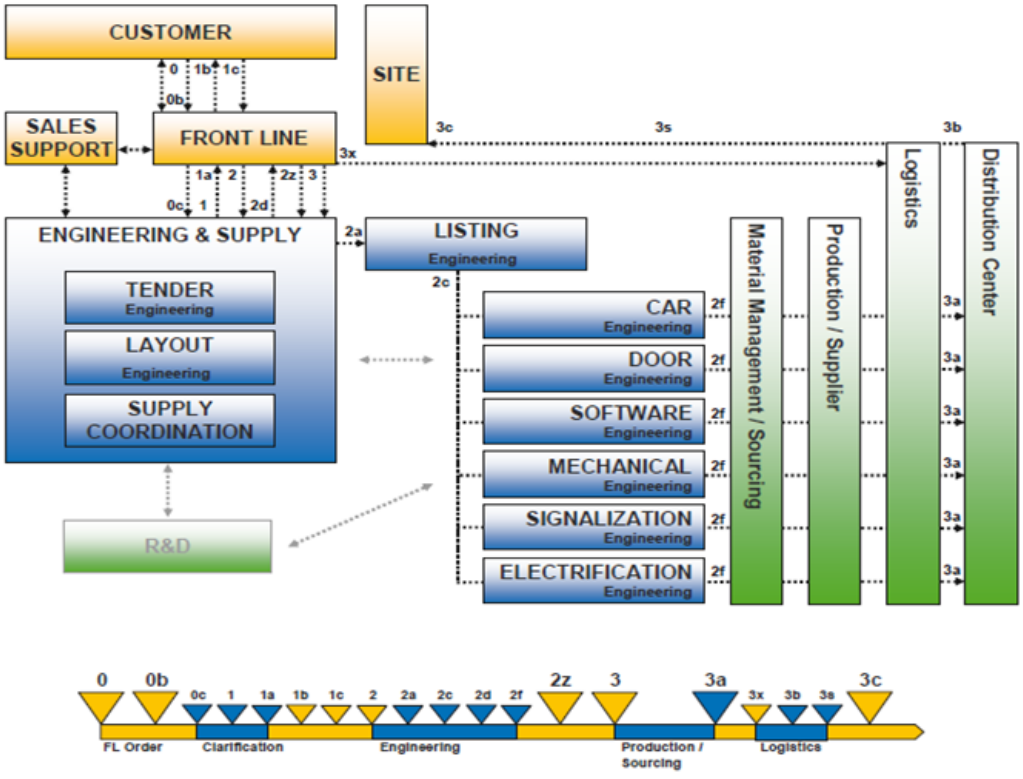


Figure 1 Research organization interfaces

From the figures above, it shows only the supply interfaces of engineering and supply, but no details of quality and sourcing assurance flow, however, which is just discussed about the importance of quality and sourcing flow in supply chain in previous paragraph.

Both the statements and figures above illustrated the whole picture of supply manager's role. However, in considering the role scope in a whole and the workload of supply managers, the author will analyze the problems of supply manager's role mixed or unclearly defined with present status and

the other key stakeholder role affecting on supply manager's role mainly in core business processes; Also inefficient, quality control, lack of quality technical resource, not 100% sourcing pre-plan, inefficient tool on financial reporting, incompetence in change management to ensure a quality project delivery. Finally the author will prioritize, summarize and make proposals on supply manager's role development new concept.

2.4.2 Supply manager's role development concept

At present, the role's status is not clearly defined, neither role's responsibility is clear. Supply manager has to do almost all the tasks in many projects which actually could be accomplished by supply engineer or other support role.

Based on the problems, the research work is meant to clarify the role and responsibility on supply managers and other stakeholders impacting on supply manager's role in the process of supply chain excellence. Hereby, supply manager's role development concept is focusing on:

- Define the core role and non-core role
- To develop for an integrated full chain
- To develop them from organizational strategy and business processes perspectives
- To assure lead time, quality and achieve competence and customer value.

Furthermore, in chapter 7 development proposals, supply manager's role development new concept, a developed status will be proposed, where there will be a table with main core role and non-core clarified and also a description on how to develop the role by highlight core role and remove the waste of non-core role for efficiency and competence.

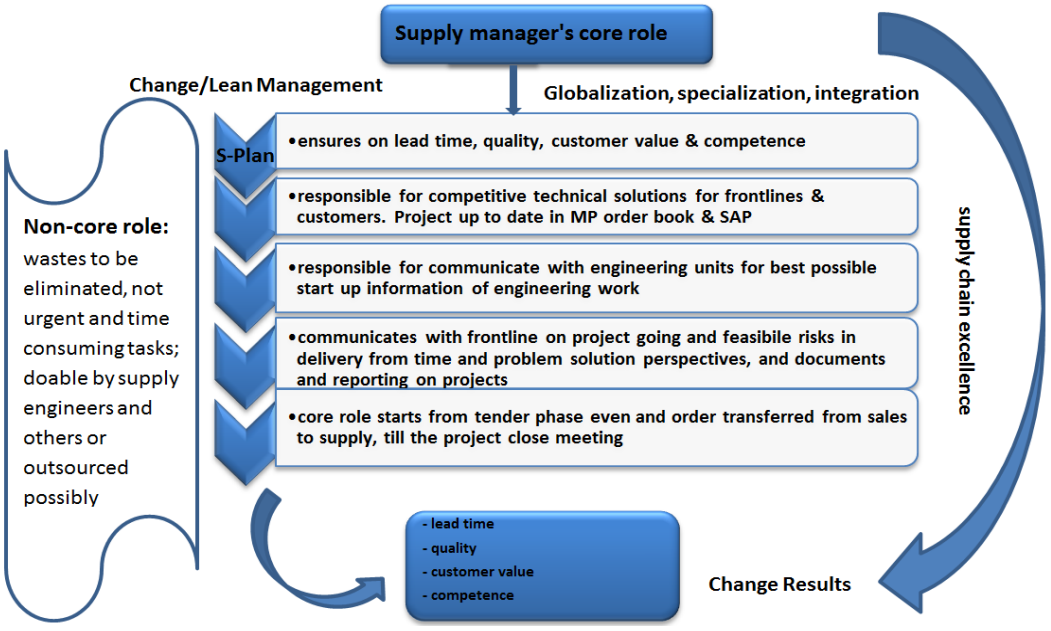


Figure 2 Supply manager's role development concept

2.5 Competence

The Supply Chain Council, an organization developing industry benchmarks and metrics, summarized the concept of supply chain management (SCM) with five words: plan, source, make, deliver, and return. Supply manager is the key role in supply chain, which demands the role should be competent enough for the supply chain management.

Supply manager's role concept from the empirical perspective
As said in project supply handbook of the research organization, the supply manager ensures that supply (sub-) project's engineering and deliveries are on time, profitable and meet customer specification. SM follows and takes actions to ensure quality of project outcome.

Also according to one interviewee on supply manager role's description, it includes mainly:

- Planning, sourcing, quality, technical solution (customer components approval) and technical clarification (engineering coordination)
- Change management with technology and variation of pricing
- Delivery with engineering coordination and logistics follow-up
- Scheduling on delivery group plan, SAP system and delays
- Financial issues with MRP report and pricing variations
- Post-delivery follow-up (QFB).

Supply manager's role competence
Since supply manager plays a crucial role in supply project management, the skills should be developed and accompanied by supply chain business process needs: planning, communication and collaboration, problem analyzing & solving skills, technology skills and solution coordination and time managing. For Supply manager's role core competence matrix, please see Appendix 5.

What is competence?
A 'competence' is an ability to do something, when applied to companies we say: A company has strength or a high competence activity if it can out-perform most competitors on a competitive factor that customer value. A company has a weakness or a low competence activity if it underperforms most competitors on a competitive factor that customers value. Competence in this sense is a way of describing how well (or not) your firm performs its necessary activities (Bourne 2002, 21).

However, the word competence is also used to replace 'high competence activity'. Thus companies having high competence activities in microprocessor design, optics design and precision mechanical design are said to have competences in microelectronics, optics and precision mechanics. We shall use that short hand frequently (Bourne 2002, 22).

As a result, along with role's competence, more **value** will be created in addition to leading business strategy, full chain integration target, efficient organizational strategy, technology and coordination skills and process

flow continuous development. In supply chain, value creation means when a product or a service delivered to the end customers from original suppliers and meet customer's requirements.

2.6 Framework outline for competence and customer value

- The main theories for the thesis: change strategy and lean approach for competence and customer value.
- Supply chain key aspects leveraging throughout the thesis: globalization, specialization, integration into business processes.
- Competence and customer value creation through role's development.

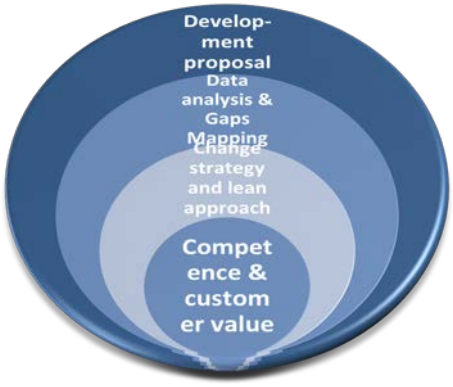


Figure 3 Competence and customer value framework

3 RESEARCH QUESTIONS AND THE GOALS

The research question is launched by one main question, after that there are several sub-questions for deepening and explaining the main question.

What are supply manager's role, how to develop for lead time, quality, customer value and competence?

- What are supply manager's roles, and what are core roles and non-core roles?
- What are supply manager's role development new concept on core role and non-core role?
- What are the challenges between frontline and supply line for an integrated full supply chain where supply manager plays a crucial role?
- What are the key gaps in core business competence processes affecting greatly on supply manager's role? (From the elements of organization ineffectiveness, technology skills and coordination challenge, process not aligned with practice and project management skills incompetence?)
- What are the main gaps in organization impacting on supply manager's role?
  - What are frontline project manager must do issues?
  - What are the key gaps on supply manager's role, and what are the wastes?
  - What are the gaps in key role's responsibility, resources, competence, discipline, commitment and motivation?
  - Is supply team operation model efficient & customer focused?
- What are the challenges with process alignment, technology and project management skills, and similarly what are the challenges to develop coordination skills?
- How to go outsourcing? (What activities on non-core role can be possibly outsourced? Any detailed business proposals?)
- What kinds of competence approach required for supply chain excellence?
- What competences expected from a supply manager?
- What are the methods for change? (Achieve change results by change strategy and lean approach by leveraging through the supply chain main aspects: globalization, specialization and core business process integration.)

4 METHODS

Qualitative methodology is conducted for the research: interview and value stream mapping.

4.1 Data collection and analysis

Qualitative methodology is adopted in many different academic disciplines research, traditionally in the social sciences, but also in market research and further context.

Interviews conducted with a small number of consumers, primarily to gather initial consumer needs or early reactions to new product concepts. (Thomson 2011.)

Lean approach means creating value for the customer through the continuous improvement of processes, meanwhile eliminating waste. Value stream mapping is a tool to help to identify and eliminate waste, simplify processes and find improvement opportunities.

Data has been collected from the research organization with the involvement of key stakeholders especially supply managers whom the thesis topic is concerned.

Interview
The author made a lot of interviews during 3 months roughly, with the scope of Finland, China and the US. The interviewed target group mainly is supply managers, but also other business areas managers and experts: project manager, supply engineer, key accountant, quality &planning manager, team leaders of supply team and engineering team and listing team leader. All these interviews make my interview results very rich and successful. Altogether 41 are interviewed, with more than 200 different ideas for developing supply manager's role, but they might be same topic only from different point of views because of different positions and professional background. The interviews were executed by face to face, online meetings, emails, phone calls and even from sourcing, logistics and quality training feedbacks analysis results. A lot of valuable data collected which is one of the most important sources for my thesis.

For detailed interviewed open and close questions, please refer to Appendix 8.

In the thesis, the interview analysis is conducted by two parts: interview statistics analysis and interview data analysis.

The author did the interview statistics analysis based on the data collected, categorized them by different categories and activities. Afterwards by Microsoft Excel tools, the author made different charts for measuring the categories and activities accordingly. All the results figures extracted from Excel data explained the problems in the research organization, provided the core business processes which need for on supply manager's role de-

velopment, at the same time, the author also interviewed and analyzed the supply manager's core competence and got the findings of the top 4 core competence.

Interview data analysis is also conducted by data collected in Excel with the categories and activities. But the author explained the problems in the organization in a descriptive and narrative ways from an employee perspective, who herself is working in the organization environment. The analysis is according to the framework structure from data analysis to analysis results and focusing on the core business processes and also according to the empirical theory of business process, where supply managers play the critical role.

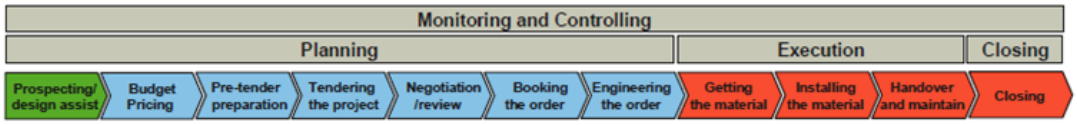


Figure 4 Business Process of the research organization

Value stream mapping
As described already, value stream mapping is a tool for lean approach to remove the wastes in processes and improve efficiency. Here, value stream mapping was conducted and analyzed by Tero Salmela on one supply project of the research organization "Princess Noura University, Saudi Arabia". In the value stream mapping analysis, he did also categories and activities happened in the study project and got the findings consequently. By mapping the gaps in the project delivery, it discovered the gaps in the processes and in supply manager's role for development.

Interview data analysis versus value stream mapping analysis
The author also executed the comparison analysis method to drive the analysis insights into even deeper phase, find the common issues by both methods from organization, process and technology management skills and project management skills on supply manager's role.

4.2 How are methods used

Qualitative methods are used in the thesis: interview method and lean approach by value stream mapping.

Interview data is used by the author to create pivot and chart and execute the analysis according to excel data. Moreover, the author categorized the data by the change required from different task categories on supply manager's role status, core business process change required according to the activities in supply phase and eventually the category of value to be added after change. The method is adopted in statistical analysis, and furthermore they are the basis for key problems finding, analyzing, and making development proposals leveraging through the thesis. They are also used by descriptive and narrative ways beyond statistical way.

Value stream mapping is then a clear case study which shows exactly the challenges in supply chain for a full chain delivery by gaps mapping. The data is used also in statistical, descriptive and narrative ways in the thesis.

Finally, the methods of interview and value stream mapping are compared for problems finding and development proposals making.

5 DATA, ANALYSIS AND RESULTS

The research work data analysis is executed through both interview and value stream mapping.

Value stream mapping data analysis is conducted via a case study and comparison is done also between interview and value stream mapping for in-depth analysis.

As addressed in data collection and analysis, more than 40 are interviewed including supply managers and other managers and experts in the research organization supply chain, as a result more than 230 issues collected. The author categorized the issues by core role, non-core role, core/non-core role, outsourcing, others and also according to the core business processes.

Core role (c): supply manager's key tasks
Non-core role (nc): time consuming, not key tasks like documents update
Core/non-core role (c/nc): it differs according to the demand by project delivery phases
Outsource (out): non-core role, which can be easily given, not too much unclear questions or quality critical concerned

Core business processes: organization, process, project management, technology and tools.

The author executed the interview data analysis from both statistical and descriptive and also narrative ways. Based on need for change identified, core business processes related for change and the value add after change, the author conducted the statistical analysis by data from Excel and created pivots and charts from different point of views and addressed the results to readers.

Please see the below pivot tables of interview original data firstly enable to better understand the charts for the statistical analysis results.

Table 1 Supply manager's role change required by statistics pivot.

Title	(All)					
Count of Country	**Role change (c/nc/out)**					
Supply phase (S-plan, Sales & Tender phase)	c	c/nc	nc	Others	out	Grand Total
Clarification	18	3	5		2	28
Engineering	8				1	9
FL order	60	1	19	1	1	82
Installation & Handover	3	3	1			7
Logisctics	2		1			3
Others	10	3		1		14
Others - Full chain target	3					3
Others - Responsibility	4	5		2	1	12
Others - Rules & discipline	2					2
Others - SAP & document Issue & update		1	5		4	10
Others - Tools	4	4		1		9
Production & sourcing	30	1				31
Sales		1		1		2
Tender phase	15	2		7		24
Grand Total	159	24	31	13	9	236

The Table 1 tells the count of change required on different role status in supply phase: core role(c), core role/non-core role(c/nc), non-core role(nc), others and outsource(out). For example, the change demand count on the column "Core role(c)": 18 change demand count for Clarification, 60 count for FL order, and total 159 count on core role change demand.

Table 2 Core business processes related for role change statistics pivot.

Country	(All)						
Count of Desired status (c/nc/out)	Related business core competencies						
Supply phase (S-plan, Sales & Tender phase)	Organization	People	Process	Project management	Technology	Tools	Grand Total
Clarification	15	1	3	3	2	4	28
Engineering	2		3	1	3		9
FL order	27	2	25	18	9	1	82
Installation & Handover	2	2	2		1		7
Logisctics	1		2				3
Others	7	3	3	1			14
Others - Full chain target	3						3
Others - Responsibility	10		1			1	12
Others - Rules & discipline	2						2
Others - SAP & document Issue & update	9				1		10
Others - Tools		1				8	9
Production & sourcing	6	2	10	6	5	2	31
Sales	2						2
Tender phase	10	1	7	2	4		24
Grand Total	96	12	56	31	25	16	236

Table 2 shows to the count of core business process change required relating with all status of a supply manager's role and the supply phases listed in the table. Let's take the column "Organization" core business process for instance, count 15 on "Clarification" change desired, count 27 on "FL order" change, and total count 96 on organization change desired.

Table 3 Statistics pivot for value add category after role change.

Role change (c/nc/out)	(All)						
Count of Country	**Value add category**						
Task category	Administrative	Engineering	Organization	Process	Project management	Tools	Grand Total
Communication & collaboration			13	2			15
Cost					1		1
Documentation	5	1	3	2	3		14
Feedback			2	2			4
Financial			1			1	2
Listing		1		1			2
Logistics	1			3	1	1	6
Order				1			1
Organization	1		4				5
Outsource	1		6		1		8
Plan & organize			4	10			14
pricing	1		5	5	5	1	17
Process		1		18		1	20
Quality			4	2	8		14
Resource			1				1
Responsibility	2		19	2	2	1	26
Rules & discipline			2				2
Sales		1	5	1			7
SAP & documents	3		1			1	5
Solution creation		12	6	4	2	1	25
Sourcing		2	1		3		6
Strategy			8	1	1		10
Technical		7	5	1	1	1	15
Time			1		2		3
Tools			1		1	8	10
Recources			1				1
Change management				2			2
Grand Total	14	25	93	57	31	16	236

Table 3 proves further the value add category after role change as shown in previous Table 1 and Table 2. Moreover, Table 3 provides the count of its task category and the value add category. For instance, the change task category "Responsibility" will create value to "Organization" by count 19, and the total count is 93 for organization value adding after change with the listed tasks category in the table.

5.1 Interview statistical analysis and results

The need for supply manager's role change

The author analyzed the data by excel pivot data from the interview. The interview statistics indicated that there is a strong need for change mostly required on supply manager's core role by 67%, which is the main problem in supply chain, and then others status demands. For outsourcing, only 4% demand, because in the research organization, the situation is that there is in house outsourcing already for supply managers and other key stakeholders. Moreover, this issue is more a politic aspect, since it concerns every employee's job opportunity and benefit. But for efficiency and lead time, to avoid hire more work force especially on the core role, outsourcing is still a strategy for further research, in this research the author

will put forward a pre-study, a business scenario for outsourcing, which needs the decision from the management team if it is going for outsourcing on supply manager's non-core role in the future.

Below figure pie tells us that 67% requested improvements on supply manager's current core role. The list of roles is in this chapter excel pivot.

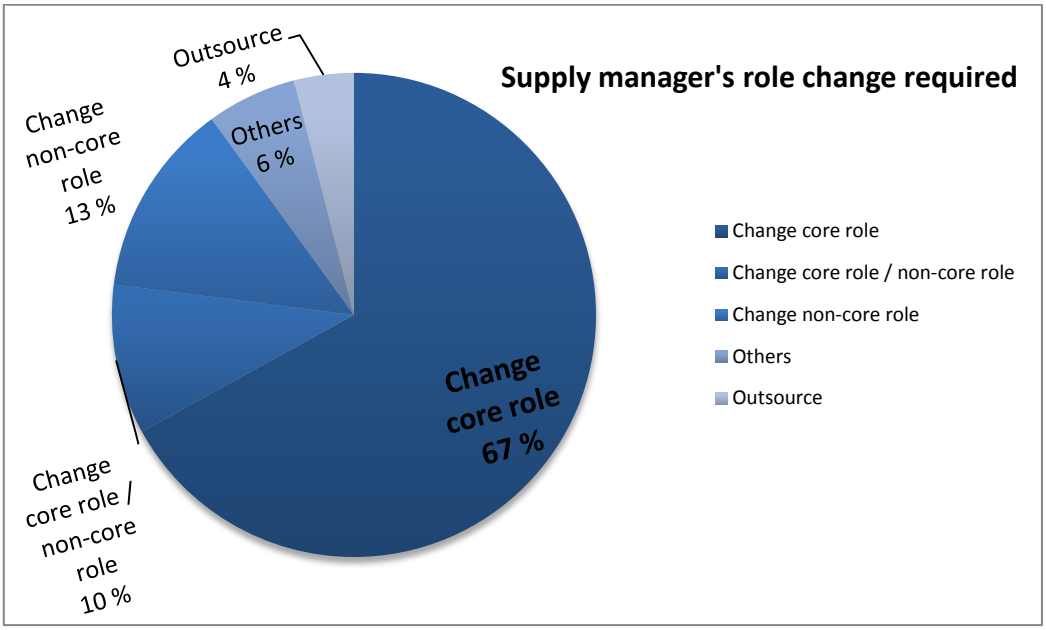


Figure 5 Supply manager's role change required

For more detailed statistical analysis charts on role change required, please refer to Appendix 1.

The change required for core business competence processes

The author categorized the interviewed questions according to the core business competence processes in the research organization supply chain. As a result, the figure is shown as below chart.

38% goes to **frontline order**, which is the primary need for business process change. In this supply process, what kind of quality orders supply line received, many unclear technical issues, too short lead time, pricing not in compliance with CSP document etc. are all impacting greatly on later phase supply project. Project manager is incompetent in finding solutions for customers, or not commitment, neither strict with document creating and updating issues.

19% goes to **production and sourcing**, which implies and proves also the problem in frontline phase, because of the problems in frontline line order, that links and lasts until the production and sourcing phase. Sourcing quality then affected by sourcing planning and quality issues already from the project start-up phase. Not all supply manager plans well enough for the special component designed order, neither special design. Technical coordination and input data for listing and engineering are big challenges, as

well as collaboration with other visual designers, chief designers or solutions support. Next then is supplier's competence, they should supply as required quality and lead time. Because of globalization organization, cross-board full chain delivery is another challenge. Furthermore, competence is also required to manage China sourcing and quality control.

Clarification 11% needs still a lot of efforts and resources for SM to check, control and follow the project during project follow-up phase, where also supply managers consume most of their time in project supply. (In the thesis, project delivery phases refer to tender phase, project start-up, engineering and manufacturing follow-up and project closing.) Re-organize the role's core and non-core role to release more time on core role, and let supply engineer and other support role to do more non-core role for efficiency, lead time, quality, customer value and supply manager's role competence. The details will be addressed, redesigned and developed in the chapter of development proposal.

Engineering 5% is a challenge for technical and technical documents issues, which has been often a bottle neck for supply manager in the last phase before manufacturing. Many mistakes in listing because of technical specification incorrectness and design mistakes, or documents are not marked as valid for order phase clearly. Listing work mistakes mean mistakes in order configuration creation in production system (ERP) because of technical specification incorrectness.

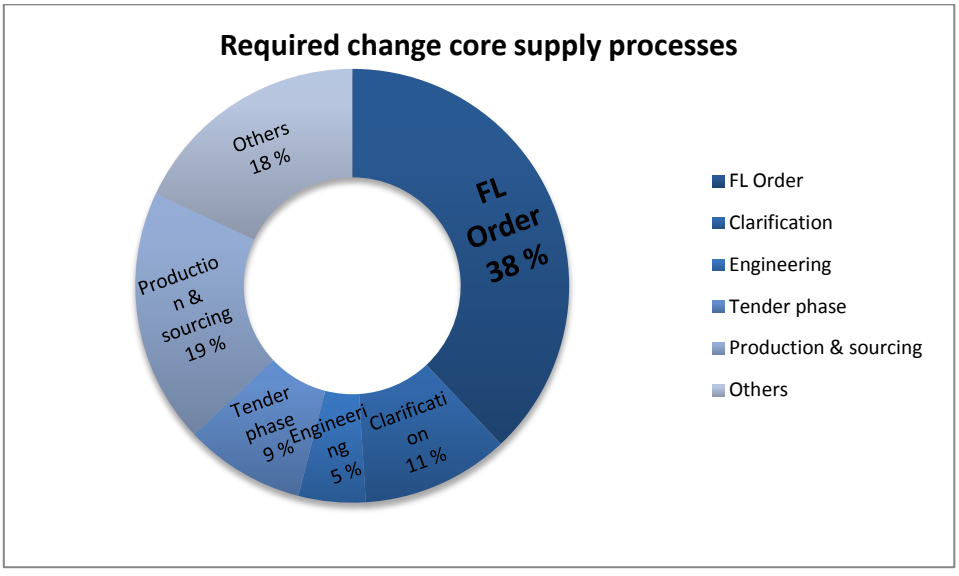


Figure 6 Required change on core supply processes

Change for core business competences

Organization is 38%, which is key development process in the core business processes. In addition, it indicates also the most required process to be developed by the research organization employees.

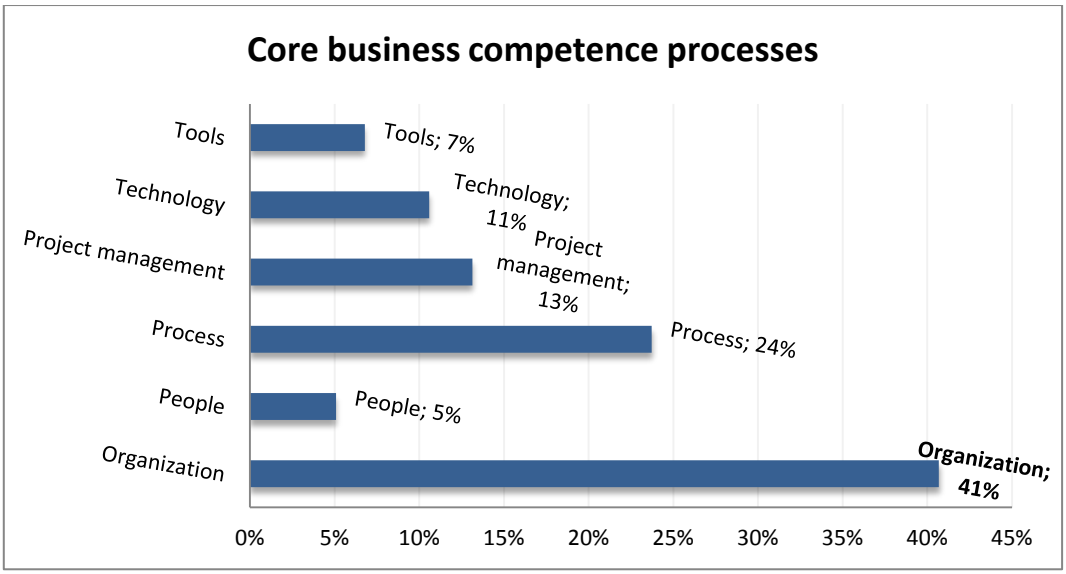


Figure 7 Core business competence processes

Value add category after change 39% goes to organization of course, the demand voices for change with organization is high, the research organization management should concentrate on this topic and find some solutions for development as soon as possible.

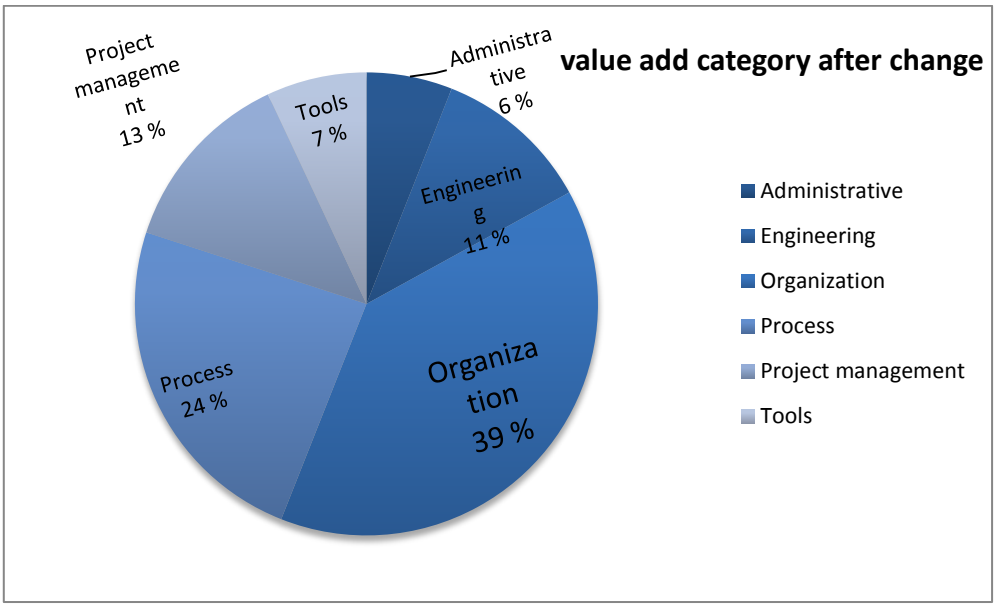


Figure 8 Value add category after change

For detailed statistical analysis on core business processes and value add category, please refer to Appendix 2.

Implications on statistics analysis results

From the statistical analysis, it shows the problem results affecting on supply manager's role with supply chain in the research organization mainly concern the core business competence processes, and can somehow have hypothesis on the key processes to be developed in the supply chain. Frontline order, the primary problem tells us the organizational strategy problem; Production and sourcing shows the problems in process on sourcing and quality and the lead time; clarification high demand relates the responsibility problems all role related both frontline and supply line as well as the other key stakeholders role for customer value and role's competence development; engineering figure then shows the technical challenges for special component design order in special business.

5.2 Interview data analysis and results

Introducing the new business goal also calls into question whether the current performance of the organization is strong enough to achieve the goal. It is important, then, for the diagnosis to take an honest look at where the organization is currently and where it must be in the future to be successful (Anderson 2003, 33).

5.2.1 Inadequate integration between frontline and supply line

Firstly, in the research organization supply chain, many problems tell us that frontline and supply line is not in the same line especially from mutual benefit perspective: benefit and bonus sharing. At least the problem root cause is because they are neither one unit financially, nor clear one goal.

Secondly, the role's responsibility is not very strict, whatever the reason is behind, in later order phase, it is found out that there are 20%-30% mistakes in technical specification (CSP) between tender phase and order phase. Project manager is not competent enough because of lack of technical back ground, neither familiar with the process, nor have enough time to do a qualified document.

Thirdly, if the technical specification document quality cannot be ensured by frontline, what supply line should do, because it is the top one important document that will leverage through the supply project and have great impact on lead time, quality and customer value, as well as affecting on supply manager's role. According to one interviewee that more than 60% mistakes with project sometimes is caused by incorrect technical specification, missing or wrong information. According to the role responsibility, project manager is responsible for technical specification issue in supply phase, and supply manager helps when needed. If PM is not competent enough or no time to do technical specification with high quality, the supply line could take over the responsibility to do it in Hyvinkää, Finland. If the technical specification issued by PM, where there are more than 30% mistakes, a newly developed process could be taken into ac-

count, especially for new supply managers and engineers as a roadmap. The technical specification (CSP) new process development proposed by Kuusela Tuomas, supply manager, would be as another development project in the future.

Fourthly, surely other documents like delivery group plan (DG Plan), the second top important document for both supply manager and project manager, which should be issued together with supply manager and update them on time. If any problems with DG Plan, the components delivery happened too early will cause the problems of high stock, otherwise too late, then delay delivery to site. Issuing document is important, update is more important, PM is not always updating technical specification on time either, which is obviously a kind of discipline and commitment problem. It is role responsibility problem too, not everyone knows or clear about must do issues.

The fifth problem is that the communication and collaboration skills needs to be continuously improved, because the research organization is a global organization, most frontline and supply line are remote located, communication and collaboration skills arise up to one of the most skills demand to supply manager's role for quality and lead time.

The next problem is that process is not familiar with every PM, especially new, even PM asks why project start-up meeting is needed. Neither every project manager keeps the start-up meeting, which is absolutely not according to the research organization supply chain processes. Consequently it will bring about more accumulated problems for supply managers in project delivery phase because of the beginning problems left open unsolved.

Implications

Frontline didn't consider carefully what negative reflections will cause to supply line if their mistakes or careless with key documents issuing or start up meeting not organizing or their inadequate communication and collaboration with customers, neither PMs have considered that the problems consequently will bring to every delivery phase of the supply chain later on. It is simply a question of responsibility and competence beyond benefit and bonus sharing.

The very nature of supply chain management implies that companies are looking beyond their four walls to improve their processes; they are working closely with their suppliers or their customers, or, better still, both. In reality, human nature plays just as big a role in determining whether a best practice actually will succeed or fail. Let's face it: Nobody wants to feel as if they are being taken advantage of, and as with any partnership, the only way you can attain a mutually beneficial relationship is if all of the parties involved are committed to it. (Blanchard 2010, 169.)

Results

- For long term change, frontline and supply line integration is required for a full and excellence supply chain, which is one of the bottleneck impacting on supply manager's role; Project manager's role and responsibility on key issues e.g. CSP, DG plan, start-up meeting should be defined and redefined.

- For short term change, the bonus and benefit sharing between FL and SL should be re-considered and organized.

Results on supply manager's role

- Communication and collaboration with frontline is core role.
- Technical specification issue and update is responsible by project manager, and for supply manager it is non-core role, but check and coordinate, or support PM with the issue.
- DG plan issuing is a core role for supply manager, who will issue it together with project manager, but update by supply manager.

5.2.2 Gaps in tender transfer to order phase

Firstly let's talk about the tender work quality affecting greatly on supply manager's role. In many cases, variation pricing notification (VPN) piled up because of inaccurate in tender phase, neither tender process is always according to process, order into house before tender work starts for Marine business, which caused a lot of trouble for supply manager's role later in order phases, when SM has to clarify the pricing issues one by one. However, behind these there are always reasons affecting on tender work, e.g. technical specification, 20-30 % mistakes between tender and order phase according to one interviewee. In addition, the research organization has special business environment for some business areas, like Marine tender case.

In tender phase, they don't have any target tender to work with, just do everything with all efforts, and the tender hit ratio in 2012 is roughly 26%. However, if considering again from the research organization business environment, a wider point of view, tender work received initially from frontline, and to be done according to the process and the technical specification issued from project manager, which means all the factors have impacts on the tender work quality. Thus, the management should pre-plan and take actions on the target tenders and be an effective decision maker absolutely, even though making SL tender does not add value. The research organization does not get any more or less money if tender is not made.

Neither supply manager is involved with tender phase on those target tenders especially, which leaks the gaps of the information flow and a whole picture of the project in later phase.

Secondly, tender transfer to order is a rush, not a complete one, neither according to the process. Even contracts are not signed sometimes when transfer happens. Frontline sales guys could give some information about

the tenders to be received beforehand, especially target tenders so as for tender team to prepare for that.

More than that, a target of 90% correctness should be set up for technical specification acceptance for order transfer to supply line normally, in addition, the measurements should also be set up according to the elevators amount and technical challenges of the projects.

Implications
Tender transfer to order is extremely important, because it is the bottle neck for supply manager to manage the pricing issues in order phase, less VPN, efficient, lead time keeping and customer value creation. VPN varies according to the tender quality, and supply manager has to manage VPN also through the whole life cycle of project delivery, which is a parallel document with technical specification, and they are related and affected if any change happens.

Results
- Targeted tenders should be decided by the leaders for tender quality and work efficiency.
- Tender transfer to order phase should be according to transfer process and less open issues on technical specification and tender price.

Results on supply manager's role

- Involving with tender phase especially on target tenders is very important even though it is not core role.
- VPN management is core role for supply manager, but update and pricing to SAP are then non-core role, which could be moved to pricing engineer or supply engineer.

5.2.3 Supply manager and supply engineer's role are mixed

There are no task differences but title difference only between supply manager and supply engineer's role. Actually they are doing almost the same tasks daily.

Take one supply area team, for example, there is only supply engineer as one interviewee said. There is a reason to have supply engineer role, because there are different kinds of task in supply project, supply manager is too busy with core role like communication and collaboration with frontline and customers for customer focus, he has to spend many hours to read and answer only emails daily, and don't have enough time to do daily tasks, non-core role, internal coordination, document update to tools or template and SAP update etc. and especially during project follow-up phase.

On the other hand, in the other supply area team there are few projects already having the pairs working model: supply manager and supply engineer take care of project together, substitute for each other and share

knowledge. Also their tasks are divided roughly like supply manager takes care of more financial issues and communication and collaboration with customer and frontline, and supply engineer more technical issues, documents update to tools and SAP, as well as internal collaboration with other units or teams. But not all the projects are working in this operation model, some supply managers are still working alone and doing everything by themselves.

Implications

There is a reason why there are supply manager and supply engineer in project supply team: different tasks and competence skills, meanwhile a learning process for supply engineer. If supply engineers are doing the same tasks as supply manager's, it's just a waste of time, neither customer focus, especially have effects on supply manager's role competence, because supply manager won't have time to professionalize on certain area or task. According to an interviewee, in his supply team, because of high work load, supply engineer resources required to support supply manager to create and update documents, as well as to update SAP time schedule.

Results

Supply manager and supply engineer's role are mixed, which needs clarify and define for role competence and customer value.

Results on supply manager's role: define and re-define core role and non-core role

Core role for supply manager

- Communicate and collaborate with frontline and customer.
- Manage financial issue; plan, organize sourcing and quality plan.
- Lead and delegate project team for the goal.
- Control important documents: technical specification, DG plan and VPN are up to date and support when needed.
- Technical solution findings for input data for listing and engineering tasks; coordinate layout designers and visual designers for technical challenges.

Non-core role which can be accomplished by supply engineer

- Support supply manager to issue, update document by tools, template or SAP and document to VariPDM or agreed place.
- Have a bigger role in project follow-up phase, coordinate internally for problems solving.
- Support on production supervising in Hyvinkää factory, and delivery shipping time schedule following up, and inform frontline, site or customers, also support for site request on installation technical support if needed.

The core role and non-core role definition means to highlight supply manager's core role and remove the wastes or re-organize the non-core role for efficiency, engineering and delivery flow, sourcing and quality flow assurance.

5.2.4 Unclear role's responsibility, incompetent, lack of resources, inadequate discipline and commitment

Key stakeholders role and responsibility

Other key stakeholders role responsibility have great impacts on supply manager's role. Without chief designer involved with the project from the beginning phase, a supply manager couldn't manage the layout designs work well; without other key stakeholders support, a supply manager could not play his role successfully in full supply chain.

Customer solution manager resource is missing, for example China business area is missing resources, only one layout designer for tender is not enough either.

Tender engineer is now working without target tenders mostly, which caused a lot of wastes in work, obviously inefficient, and the hit ratio is about 26% in year 2012. Technical competence is lack of. It would be wiser that layout designers from layout team organize the trainings for tender engineers for technical competence.

Chief designer / Technical solution support

Chief designer should have a bigger role, not just have title but not act his responsibilities as a chief designer. Now most chief designers are doing their tasks only on several projects at a time, they have no time or energy to coordinate other projects anymore. Another problem is lack of resources, there are not enough chief designers allocated to every project unfortunately.

A technical solution support role is missing too, who could find solution on input data especially with special components design. If no competent resource available, chief designer could work as the technical support role and coordinate both layout designers and visual designers.

Key visual designers: car, door, electrification, signalization, machinery responsibility also should be more clear, meanwhile motivated. Sometimes getting an answer from emails could take many days, which is just because of too busy simply. How to motivate them for efficiency, lead time? More internal communication and collaboration happenings should be organized between the different units via training, seminars and workshops.

Car designer is not allocated in a logical way, according to supply manager, but not to projects. Suppose that supply manager has 10 projects in hands, he then has 10 car designers for each project. A better way should be considered to re-organize the role by supply manager instead of by projects. In addition to that, more project team spirited, and customer value focused.

Other missing resources search, training and motivation actions needed.

For sourcing and quality flow assurance, supply managers should plan, source and control the quality according to the process, but

- Not each project has plan
- No good supplier knowledge
- China sourcing quality problems
- SLQ and CTQ are not in action by 100%.

For engineering and delivery flow, supply manager's responsibility on controlling listing work:
Listing engineering output and manufacturing engineering input requirements are often not clearly aligned (QD 22.710 input form as standard for SM).

Material Management on China delivery responsibility unclear, On China delivery, surveillance on delays is done too late. No clear responsibility for each business area. Now there is also an ongoing project in logistics for one contact point.

The research organization only has installation instructions for standard elevator but not special designed. It is not clearly defined either whose responsibility it is: supply line layout designer or installation support role on site.

According to Obeng, in modern projects, it is unusual for the project leader to have full responsibility or full control over the actions of their stakeholders; and yet the project leader continues to be held fully accountable for project success by all the stakeholders (Obeng 1994, 114).

Discipline and commitment towards work is not strict enough. In many cases, supply manager has to check and follow other's work done, which sounds quite fancy. However, if going deeper to the insight of the problem, it will connect possibility with the organization strategy, rules and norms are unclear, or motivation is missing because of unclear awarding and recognizing systems.

Perhaps the single most important concept in planning and executing offensive or defensive competitive moves is the concept of commitment. Commitment can guarantee the likelihood, speed and vigor of retaliation to offensive moves and can be the cornerstone of defensive strategy. Commitments influence the way competitors perceive their positions and those of rivals (Porter 1980, 100).

Implications
There are many key stakeholders in supply project that affect supply manager's role. There are good reasons why these roles should be defined and re-organized for better cooperating with supply managers and supporting supply managers to assure lead time, target high quality and for customer value, meanwhile for supply manager's core role and competence.

A project's organizational structure should contain layers of authority that allow people at different levels to use their particular skills, knowledge and experience to take the right decisions at the right time. In the same way that the organization's structure will (or should) have been designed

to meet its particular needs, so should the organizational structure of the project be tailored to meet its objective. It must also offer a means by which the expectations of those involved or who have an interest in the project may be met. (Roberts 2007, 50.)

Results

- Role responsibility needs defining and redefining on stakeholders.
- Discipline and commitment should be strict.
- Contact points and interface with other units should be visible.

The results on clarifying supply manager's role responsibility

- Highlight supply manager's core role.
- In project start-up, coordinate internally with other key stake holders for engineering and design issues besides with PM and customers, support project managers with technical specification, DG Plan and VPN.
- Continuous communication and collaboration with frontline and customer for problems clarifying and solving.
- Involving with tender phase especially for target tenders.
- Plan sourcing and quality by SLQ and CTQ.
- In project follow-up early phase mainly, engineering and design, clarification, listing and engineering work quality review.

Remove non-core role, which could be taken over by supply engineer:

- Project start-up phase: support SM to issue, update and check documents by tools and SAP update too.
- Project follow-up phase: order check, mistake check and coordinate with other stakeholders internally like problems clarifying and solving, other support tasks like documents issue and update to template and SAP.
- Tender update to template or to SAP by tender engineer after initial version issued.
- Support production supervising as well as delivery phases coordinating with material management and shipping time schedule and inform frontline.

5.2.5 More job rotation opportunities required

In the research organization, the situation now is that there are certain external job rotation opportunities to Asia and the US etc., but definitely expect even more, and also internally with other departments.

Internal job rotation between teams or other units is highly expected, e.g. SM/SE do tender for a fixed period to get to learn what is tender engineering work, which will obviously help SM/SE to understand much better pricing issues later on in project management and naturally ensure quality, assure lead time, it is also a kind of organizational learning for role's development and competence.

It is very a useful advantage and benefit for employees to get to know and get integrated with other units, like material management and logistic, there are always wonderings how the invoice is created in SAP system, and with whom to contact by business areas.

If the employees are tired or competent enough for the role by lasting 5 years, they will be really initiative to look for more challenges for competence development and work innovation by job rotation opportunities inside the organization.

People like to create things and generally enjoy challenging situations where their creativity is needed. Beginning an initiative is usually accompanied with people's initiatives are prolonged, complex, and at time frustrating. People's energy reserves are constantly being depleted (Anderson 2003, 94).

Results
Job rotations are required not only externally but also internally or with other units for diversity competence.

Results on supply manager's role
Via possible job rotation, supply managers will certainly strengthen diversity of skills and have big picture and better knowledge in project management, quality assurance flow and engineering and delivery flow accountability.

5.2.6 Inefficient supply team operation model

Supply line operation model
The main problem is still the organization. The operation model for supply line now leads the situation that employees have many layers of leaders while working for a task. That will cause absolutely inefficient, neither project team based nor customer focused.

Also some issues should be reconsidered and re-organized like tender engineer case. Now there are one or more tender engineers working for tender phase, but another different tender engineer doing VPN pricing, which actually should be taken care of by only one tender engineer from tender phase until the end of the project. It is difficult for one VPN tender engineer know every details about the tender phase done by another tender engineer.

The research organization is doing projects in supply chain process environment, where the Corporation Global Manufacturing Network and supply (KSU), engineering and other Supply Unit of Finland (SOF) & Elevator Component Unit (ECU) functions operate in process. There is mismatch due to this.

Frontline project team
The key roles in frontline project team are:
Sales manager, Sales engineer, Tender engineer and Project manager. Frontline supply manager role also exists in some frontlines.

Site installation:
There are roles on site: site manager, assistant site manager, assistant site supervisor, fitter and helper.

For more details, please refer to frontline project organization chart. Appendix 8.2

According to one interviewee, the most challenge in frontline is that
Sales manager should work together with project manager seamlessly. However in real project life, they are not always working like that. The reasons behind is still organization problem, which should be analyzed and developed by a separate project, and will not be further researched in this thesis.

Feedback to a supply manager by a project manager
Supply manager is never replying messages soon enough, SM is not giving correct prices, then changing prices too often and also too high internal margin. Customer approves the drawings, but SM should create new revisions for the drawings much quicker.

The possible explanations could be because supply manager has to do many tasks, and do not have time enough to take care of everything, not enough coordination with tender or inaccurate CSP data. On responsive time for layout drawing revisions, it is required to coordinate closely with the layout team. Besides, there are so many factors related, workload or competency.

Results
Supply team operation model needs changes considering efficiency of engineering and delivery flow, and plan and quality assurance flow for customer requirements.

For long term change, all the supply teams will be re-arranged for project needs by business areas.

For short term change, based on the operation team now, only define, redefine and re-arrange the role's responsibility, e.g. tender engineer should play its role through the whole life cycle of the supply project from tendering until the project close.

Results on supply manager's role
As a result, for role's competence and customer value creation, the challenge is what kind of new operation model for supply team is the best efficient and well customer focused for customer value. A new operation model on project team based would be a good choice.

By a new supply team operation model, Supply manager's role will certainly be more efficient because he could focus more on his core role and supply engineer or support role take over more non-core role, and other key stakeholders will support supply manager's core role as well.

5.2.7 Process is not aligned with practice, neither visible enough

Since people are living in an ever changing world, there is no organization to have its process perfect in place, and that is why process development is always needed according to the business needs.

Frontline
Project managers don't always organize project start-up meeting because of unfamiliar with the process, but it is very important for supply line to have the start-up meeting when supply manager will put forward technical issues especially to discuss by face to face, otherwise online meeting.

Tender
Tender process should be improved for better quality and lead time, of course which should start from frontline technical specification quality and customer solution manager's support. According to several interviewees, tender documents are not marked as valid for ordering references. Neither tender layout nor other layout documents are all documented for users to find easily.

According to Blanchard, the company can develop an internal evaluation model that helps it identify when and where it needs help:

- Is this process or function strategic to our organization?
- Does this process or function provide us with a competitive advantage?
- Do we want to upgrade performance in this area to differentiate us from our competitors?

(Blanchard 2010, 151.)

SLQ and CTQ are still a challenge
Sourcing, logistics and quality plan management is one of the important roles for supply managers. However, some projects are missing the SLQ and CTQ plans, which are not following the delivery process requirements. Neither supply manager has enough good knowledge of supplier to get better component offer and ensure quality, lead time and meet customer's requirements.

To make process more visible, who is responsible for and where is the interface globally
The process interface between frontline and supply line is not defined clearly in many cases for the research organization Finland, the same pain with the research organization China, for instance for importing components quality certification and VPN offering to customers in China. Who are the responsible contacts person for the interface from Finland Quality and pricing team?

To make the process work better, let it more visible, the research organization should find a solution for the employees to know what the processes are and from where the information could be found.

In China Operation
Also in China the research organization, there are many process problems, for example quality control process on importing components need quality certificate from suppliers, and incompetent for VPN pricing calculating on special importing goods, which need support from Finland. Detailed further development needed.

In the US Operation
Since it is a new business area, there are many process issues required to be developed and controlled, interface is needed. Separate further development required for the whole business unit.

Results
For long term change strategy, for plan, quality and sourcing flow assurance, it is needed to clarify clearly the process, responsibility, rules and norms for the whole MP.

Enable to make the process work better in a global organization, let it be more visible, the research organization should find a solution for employees to know the road map for processes and also from where to get the information. Who and what are the intermediate or interface for process data flow.

5.2.8 Technology management challenge

Special design technical challenge, lack of resources, incompetent
Input data technical solution is the most challenge facing with technical issues. From customer requirements to the corporation language by frontline, and find a technical solution accordingly by detailed input data for listing and engineering references. The research organization is missing competent role as a technical support for inland business, Marine business as well as Modernization business. Also quality support is missing for quality control.

Technical support role is a critical role also in the whole delivery project, because not all supply managers are technical background. Supply managers will coordinate with technical support role or a team of technical support roles to create special technical solutions for input data required by customers during ordering, engineering, manufacturing delivery processes. Moreover, if with the help of ACI, the problems will be reduced to 20% percentage, which will be easier for solutions finding and lead time shortening. Therefore, ACI's importance should also be highlighted in supply manager's role development from technical solution perspective. To make our process work better, a formula technical template should be created for specialties becoming more standardized by fulfilling certain criteria, also considered good for long term documentation management.

There are numerous resources that firms seek to acquire when they diversify. These resources include attractive markets, proprietary technologies, and expertise. (Pitts & Lei 1996, 62.)

Customer variation management
Ever changing requirements by customers is another challenge. Besides technical solution finding, all the changed documents technical specification, DG Plan etc. and pricing should be up to date in several tools, templates and SAP system. It is found out very often that the documents in different tools or templates are not always up to date in harmonization, which also caused some problems after engineering is ready and production is going to start.

Results
To meet customer's special order requirements, it is needed to have true professionals and talent people. But technical solution support and chief designer resources are missing. Neither all layout designers are competent enough.

For mid-term change, it takes time to give trainings to technical solution role, chief designers and other layout designers for role competence.

From specialization as a service point of view, special component design and delivery to customers is one specialization service by the research organization, which created customer value while delivering a special component embedded with special design services.

Results on supply manager's role
Supply managers should have more training on technical issues for role's competence. Also one important point for the role is to coordinate with technical solution engineers, chief engineers and layout designers for solution findings and manage the ever change requirements by customers. Moreover, the real situation in supply teams of the organization is that not every supply manager is technical background or technical experienced in elevator industry.

5.2.9 Project management skills continuous improvement required

This is mostly related with supply manager's project management skills and competence. Surely it also covers all the key stakeholders in the full supply chain.

Supply managers and supply engineers have dedicated their tasks well, but nobody is perfect, their project management skills need continuous development according to business needs. For example, some supply managers are not technical background or lack of technical experiences in elevator industry. Mostly they are too busy to do every task, so time is another challenge, which also affects quality and value creation. But to manage the time better, it is required to plan well in the project beginning. Especially new supply managers or project managers are not all familiar with the process, which takes time for them to learn by doing and experiencing.

Project managers especially in modernization business are not well experienced, neither competent enough for installation technical solution findings. Service business special challenges are that installation happens while building is in use, old and new technology conflict, and new overtakes old technology challenges. Besides, site installation instructions are missing, which are required from supply line.

Implications
There are many problems in the research organization supply chain and with supply manager's role. Overall, the problems are mainly in core business competence processes in supply chain: organization, process, technology management and project management. In addition, they are addressed and analyzed from supply chain globalization, specialization, integration and integration with core business processes perspectives.

Results
Supply manager's role in project management skills needs continuous development to meet business needs and customer's requirements. They are mainly classified by two aspects organizational development and personal development. Moreover, if possible, also go for occupational education or out of organizational development.

5.2.10 Outsourcing needed on non-core role

Here the outsourcing means a service. In supply manager's role there are some non-core tasks which can be outsourced to eliminate time waste for supply manager's role competence and customer value.

Results
- Eliminate the wastes in supply chain for efficiency.
- For long term change, make more profits by manpower savings since Indian manpower is much cheaper than Finnish.

Results on outsourcing possibly non-core role of supply managers
- Issuing and updating documents by tools, templates or to SAP.
- The tasks have to be easy to give, can be easily followed-up and quality controlled.
- Technical demand is not very high.

Strategic decisions are often controversial in nature. Managers within firms often debate the merit and impact of strategic decisions. For example, investing in new technologies may result somebody lose the jobs (Pitts & Lei 1996, 8).

5.2.11 At a glance - tools development needed in the future

This is a huge topic and development area for tools process development, which will be a separate research and development in the future, because

there are a lot of wastes for supply manager's role also with tools. According to the interviews, the main requirements are:
SAP system: global integration for C-process delivery purpose, automation and harmony from all levels and logistics shipping date tracking available globally.
SAP for financial calculation and forecast for budget purpose from project level like frontline has.
Technical specification (CSP) is to be developed on web based, live tool, so that both frontline and supply line can do the update whenever needed.
Specialization for technical specification on Marine and Modernization business areas use should be developed differently.
MPR triple work is simply a waste of time, integration between DG Plan and MPR is needed.
Tools integration is needed among VPN excel, MPR excel and MPR tool.
Material forecast tool development is required.
Price variation tool is expected to integrate tender price, VPN and price in SAP.

Above listed tools development issues are important for the research organization, because SAP system is a compulsory tool for SM's role for data handling and now it is not integrated globally and has caused a lot of problems with data up-to-date between frontline, supply line and customers and financial issues as well. Other tools integration among CSP, VPN, MPR then is a must on-going development for data accurate, harmony, easy follow and update. Consequently enable to assure engineering and delivery follow, and financial, sourcing and quality flow. Material forecast tool is for forecasting the orders receiving and delivery information, which is extremely important for budget purposes.

5.3 Value stream mapping data analysis and results

Value stream mapping is a tool for waste identifying and eliminating to improve processes. This is a case study by Tero Salmela, a value stream mapping method on project Princess Noura University, Saudi Arabia, which is a full chain delivery project. Value stream mapping gap findings as below are concluded from organization challenge, full chain delivery challenge, technology, sourcing, incompetent project management and complex process.

5.3.1 Organization challenges

Integration, internal and external communication, collaboration, responsibility issues

Non-core functions have taken more than 2/3 parts of the total project tasks yearly. It shows obviously the inefficient problems with the organization. The total work hours are 1447 for nine months lasting project.

There are professional experts for the project management from both China and Finland, which have challenged the communication and collabora-

tion skills with customers and frontline, financial issues, technical issues, internal coordinating with other units, and quality review better control and follow-up.

Rapid and dynamic change essentially turns enterprises accustomed to structure and routine into organizations that must improvise solutions quickly, correctly and with grace. The bigger the complexity and the more unpredictable the situations are, the greater the workers´ dependence on tacit knowledge, creativity and innovative solutions. (Gartner et al. 2001, 11.)

Table 4 Salmela Tero 2013. Value stream mapping. Project "Princess Noura University, Saudi Arabia".

Week		201007	201008	201009	201010	201011	201012	201013	201014	201015	201016	201017	201018	201019	201020	201021
Milestones		OC		Approval engineering			1A									
Project work load total [h]	1447				0	136	126	3					12			
Project coordination [h]	445				11	11	12	1					28			
Approval engineering [h]	241					103	126						12			
Order engineering [h]	762															
Project coordination		Order received in SL	Pricing of not-tendered components and changes			Rush start: Preparation for first approval			Cancel rush start: no customer approvals	Pre-order of MX20 machineries to China Monos			Technical: clarification of supply scope in tender		SUM	China sourcing planning
Engineering, design, solutions					Layouts: E&S China layouts. Coordination Fin-Chn	Layouts: clarification of China component selection	Layouts: practising Layout CDE (Taimi T) and layout report			Layouts: realization that SL internal start-up should have been						
Change management, problem solving						Layouts: scope change, most of layouts by KME							Changes: car floor material	Sourcing: finding custom car floor material from China		
Project tasks				Piloting: KBLP plant development start								Logistics: planning of shipment volumes (containers vs DGs)	Transys car piloting: mock-up in China	Pilot: KBLP S03 test finishing with GD	Quality: Car inspection arrangements	Customer clarifiation: strenght calculation

5.3.2 Full chain delivery challenge

Sharing of activities across different value-chain activities is another motive prompting diversification. Sharing activities produces greater economies of scale and thus lowers total costs (Pitts & Lei 1996, 62).

The project Princess Noura University to Saudi Arabia, it is a full chain delivery by supply from both China and Finland. There are much more challenges than normal project, 2 supply managers, one Finnish, another Chinese, communication and collaboration is a challenge.

Moreover, the inspection time by Intertek, an international inspection company operating in Saudi Arabia is not planned and arranged beforehand for this project, which should have been made before manufacturing date and the inspection made soon after manufacturing date.

For a full chain delivery project, project level planning skills required, which should be designed from project level and delivery time as well as

inspection time should be well planned beforehand in the project start-up phase.

The challenges are mostly in engineering, sourcing, quality and documents, also process elements related because of full chain delivery from both China and Finland.

According to R Buckminster Fuller, we are not going to be able to operate our Spaceship Earth successfully nor for much longer unless we see it as a whole spaceship and our fate as common. It has to be everybody or nobody.

In addition, from world global point of views, the advent and power of connection technologies – tools that connect people to vast amounts of information and to one another – will make the twenty-first century all about surprises (Branson 2011, 249 & 253).

5.3.3 Technology challenge

- Even though it is not a very challenging order technically, there are special designs: modified ceilings, China Mono space orders have glass cars etc.
- SM ended up taking role of car, signalization and door engineer (China sourcing).
- KBLP Piloting and listing engineering support from Finland
- Variations management with car and COP design during manufacturing. Design changes with car floor, customer demand to travelling cables, and COP display customization. (display in car operation panel).
- Sourcing challenge for cross boarder business

Comparatively speaking, the project is not very demanding technically, still it takes a lot of efforts to support china in listing and engineering from Finland. (KBLP: direct delivery from China terminal to the destination terminal. E.g. to Asia or Middle East, non-European countries, not transfer from European sea port.)

5.3.4 Sourcing challenge for cross boarder business

Supplier competences should be improved, both in China and Europe. Supplier's delay resulted in number of elevators delay. There are conflicts with supplier selection between E&S Finland and China. E&S Finland did not have Shija as supplier, but now two sources in same project. Quality certificate required from China delivery. Quality certificate required from China delivery.

5.3.5 Process complex

Quality certificate required from China delivery by custom in Saudi Arabia, which is a new process for the research organization supply chain.

5.3.6 Organization challenges

Lack of industrial work approach
Easy project is still time schedule complex. 150 emails for customer visit required. Industrial work approach is missing.

SM operates with unfamiliar areas of expertise: quality and design inspecting, customer visual material and sourcing including architect design support.

5.4 Interview versus value stream mapping

From the analysis, the common issues are almost more or less related with lead time, quality, customer value and competence in organization, technology, processes and project management business core competence areas.

Workload results by VSM: work hours are roughly 1450 for the project lasting about nine months, and workload goes mainly to the tasks of project start up on core roles, and follow up on non-core roles. Project tasks 1/3, as well as change management 1/3 for supply managers are simply too much, which is the same workload as project engineering coordination and design. These are wastes to be eliminated on non-core role mostly in project start-up and delivery follow-up phases, which can be definitely taken over more by supply engineer or even outsourced.

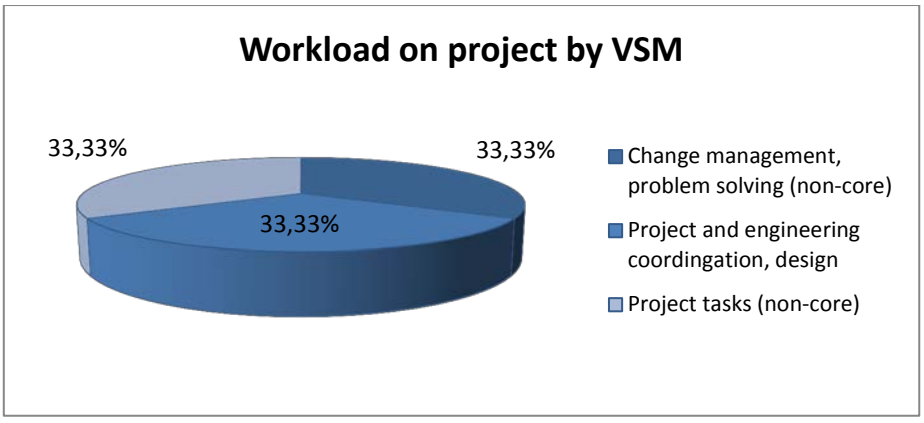


Figure 9 Project work load category by value stream mapping

Workload results by interview: total average yearly work hour is about 1550. Delivery follow up takes 63%, project start up 16%, manufacturing 13% and project close 13%.

In delivery follow up, the core tasks are mostly:
A. Follow up
B. Technical issues clarification:
    1. Layout activity clarifying
    2. M-drawings
    3. Risk analysis
    4. Samples
C. Engineering coordinating
D. SAP & documents issue & update.

It shows obviously there are many wastes in 63% workload of the total, SAP & documents issue & update could be taken over by supply engineers or outsource. Also in the later phase of delivery follow up, supply engineer could take over more tasks from supply manager.

Delivery follow-up phase is the core task phase for supply managers and where they spend almost 2/3 of the total supply project time, and also there are a lot of wastes to be eliminated. According to several interviewees that supply manager's role in supply project reality is normally classified as the phases: project start up, engineering & manufacturing and project close.

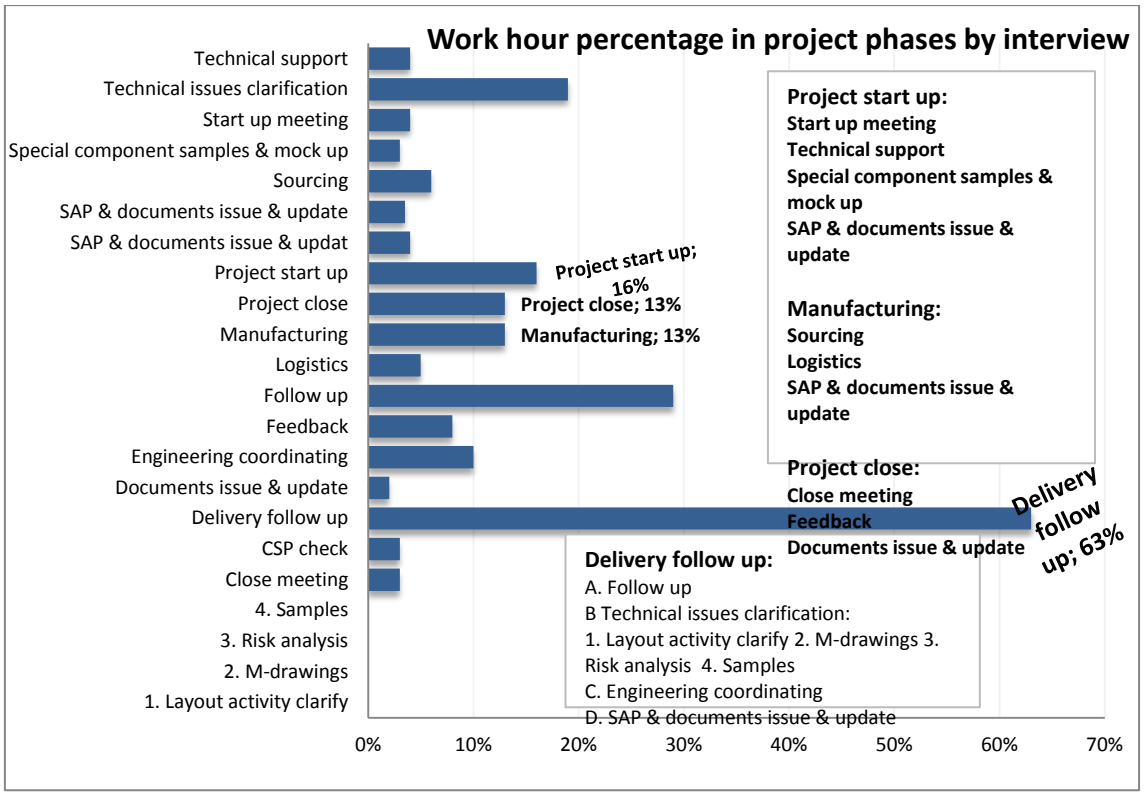


Figure 10 Work hour percentage in project phases by interview

For detailed project phase work hour percentage for supply managers, please refer to Appendix 3.

Other findings from both:

- There are not enough full chain targets between frontline and supply line.
- SM's core role is to coordinate, check and follow-up the lead time, quality and customer value.
- In project follow-up phase, too many non-core role on supply manager, which should be moved more to supply engineer's role.
- It is very necessary to remove time wastes by role defining, re-defining and re-organizing especially on key stakeholders in supply chain for efficiency, customer value and competence.
- The supply team operation model is inefficient at the moment.
- There is a need for process further development and follow-up by many ways.
- Special component is a challenge: resources missing also quality technical support resource missing and lack of competence.
- Project management skills need continuous development for role's competence
- Outsourcing is doable on supply manager's non-core role which can be easily given, but has to be very careful since there are some risks.

Implications

Based on the analysis results, it can also be figured out the key issues for re-design and deployment for the future, but the detailed proposals will be launched in chapter 7. Here are the main themes leveraging through core business competence processes, **the goals** are for Lead time, quality, customer value and competence.

Results

The wastes to be removed

1. Non-core role of supply manager's mostly in project start-up and project follow-up phases are to be removed. The tasks are time consuming, routine like documents issue and update by tools or to SAP system, which could be taken over by supply engineers (SE) or outsourced.
2. Moreover, also remove the wastes on other key stakeholders role responsibility unclear, inefficiency and lack of resources in the core business processes.
3. Operation model is inefficient, non-customer focused.
4. Remove the wastes that are not in compliance with processes.
5. Being lack of technology competent resources.
6. Role is incompetent.

The waste remove approach: By change management and lean approach in business core competence processes: organization, process, technology management, project management and competence approach.

5.5 Results on supply manager's role development

Hereby, there is a figure illustration on supply manager's role development in a nutshell, which concluded the themes analyzed in previous chapters and here is the conclusion outline:

- Supply manager's role development new concept for core role highlight, value creation and competence achievement
- Frontline and supply line full integration by short term and long term for competitiveness
- Role define, re-define and reorganize, mid-term change, and strict with discipline and commitment, resources search
- New operational model change by short term and long term
- Process is in compliance to practice, visibility, interface and data flow; sourcing and quality plan & control
- Technology challenges and coordinating, project management skills continuous development
- Outsourcing tactic
- Competence approach.

Figure 11 Supply manager's role development in a nutshell

6 DISCUSSION

In this chapter, the author will have in-depth analysis and discussions on the main themes throughout the thesis, supply manager's role development for competence and value creation for business goals. In the research, reliability and validity are the in-depth data analysis and also the limitation and further research are addressed.

6.1 What competence expected from a supply manager for value creation

Supply manager's role competence will certainly help to create more value for the corporation shareholders. In addition to the top 4 competence skills in project management by supply manager according to interview: Plan and organizing skills, communication and collaboration, problems analyzing and solving skills and technology solution coordination. Supply managers should have other essentials as driving force for value creation:

- Value accountability for results;
- Value feedback to drive even greater performance;
- Value knowledge creation and learning;
- Value creation by highlighting core roles.

Supply manager acts as an undertaking role in the sustainable change for business value, he works for results to target the value accountability, trust and commitment. When people have a shared understanding, they are more likely to develop a shared sense of commitment (Anderson 2003, 214).

Through feedback evaluation, supply manager role will progress towards the goals and consequently drives higher performances.

Knowledge learning will improve supply manager's competence continuously according to business needs, and enable to launch innovation and keep higher inspiration for change, because there are no limits in competence.

Focus on core role of the top 4 competence skills, and remove the non-core role to supply engineers or other support roles.

6.2 How to create more value

Value creation is the performance of actions that increase the worth of goods, services or even a business. Many business operators now focus on value creation both in the context of creating better value for customers purchasing its products and services, as well as for shareholders in the business who want to see their stakeholders appreciate in value.
http://www.businessdictionary.com/definition/value-creation.html

For more value creation, the research organization should have:

- Right business strategy and goals for excellence supply chain
- Role's competence as a value driven force

- True professionals for cutting-edge technology as a value driver
- Process flow in compliance to business needs
- Customer focus.

Full chain integration for a long term strategy, reasonable bonus and benefits sharing as a short term strategy between frontline and supply line, also short and long term efficient operational model, all these will motivate key stakeholders of both business lines to focus on customer's requirements, assure delivery flow and quality flow for more value creation.

People make things happen. Along with the role's skills continuous development in many ways, organizational, personal and professional developments, they will be definitely the driven force for business goals by strong pre-plan and organising skills, excellent communication and collaboration and problems analysing and solving skills.

Cutting-edge technology by true professionals will differentiate you from other competitors for competitiveness, which will ensure the engineering design flow to meet customer's needs for more value creation.

Process flow for business needs to ensure full supply chain flow, information flow and efficiency, and finally create more value.

6.3 Value creation challenges between stakeholders and shareholders

Achieving competence and creating more customer value by stakeholders best performance is the business strategy of shareholders.

The corporation's objective is to achieve sustainable and profitable growth by meeting the needs and expectations of the customers in the most efficient way. The corporation's foremost responsibility is to the shareholders. However, economic performance not only creates value for the owners, but also brings important benefits for other stakeholders according to the Corporation Responsibility Report, value creation. The largest of the stakeholder groups in terms of distributed value are employees (wages and salaries), shareholders (profit distribution), and the public sector (taxes and other contributions).

The corporation's growth for success is driven by the ability to meet customer's requirements, as well as the role's competence, employees' best performance. The shareholders are important for the corporation stakeholders by ultimate decisions making and provide capitals for business operation and growth, and re-investment.

6.4 Reliability and validity

The use of reliability and validity are common in quantitative research and now it is reconsidered in the qualitative research paradigm.

Qualitative research

Qualitative research is a type of scientific research. In general terms, scientific research consists of an investigation that:

- Seeks answers to a question
- Systematically uses a predefined set of procedures to answer the question
- Collects evidence
- Produces findings that were not determined in advance
- Produces findings that are applicable beyond the immediate boundaries of the study.

Qualitative research shares these characteristics. Additionally, it seeks to understand a given research problem or topic from the perspectives of the local population it involves. Qualitative research is especially effective in obtaining culturally specific information about the values, opinions, behaviors, and social contexts of particular populations (Qualitative Research Methods: A Data Collector's Field Guide).

Qualitative research uses a naturalistic approach that seeks to understand phenomena in context-specific settings. Qualitative analysis results in a different type of knowledge than quantitative inquiry does because one party argues from the underlying philosophical nature of each paradigm, enjoying detailed interviewing and the other focuses on the apparent compatibility of the research methods. (Golafshani 2003.)

Reliability

Besides the term reliability is meant for a concept of testing or evaluating quantitative research, but also the idea is often extended to other kinds of research like qualitative research. It is the idea of testing as a way of information elicitation, and the most important test is the quality for qualitative research.

In the research, the author used the qualitative method interview and value stream mapping which make the research more reliable and compatible from different perspectives of each paradigm. More than that, interview statistical data analysis also raises the reliability of the research, and value stream mapping is conducted by a live supply project, which ensures the research definitely reliable.

Validity

The concept of validity is described by a wide range of terms in qualitative studies. Qualitative research is based on subjective, interpretive and contextual data, of which two important validity methods are to be taken into account: descriptive validity and theoretical validity.

Descriptive validity refers to the accuracy of the data; Theoretical validity goes beyond concrete description and interpretation and explicitly addresses the theoretical constructions that the researcher brings to, or develops during, the study. (Thomson 2011).

Reliability & Validity test

Are the thesis data valid and reliable by qualitative research? For this question, the author has taken into account and organized data validation test by the target group interviewed supply managers of the research organization, who helped to test the data quality for validity and compatibility for the thesis context. On outsourcing research, the author did the check and test also together with the Key accountant to make the proposal figure analysis more logic and accountable for further research reference; of which also proved that the qualitative research used for the thesis not only has the concept of validity but also reliability.

6.5 Limitations and further research

As addressed a bit already in the introduction chapter, the research is meant for supply manager's role development in the business environment of supply chain core business processes for supply chain excellence.

Since the research organization is a cross boarder organization with its branch operation office and factory in China and office in the US, which are not covered in details for every process problem analysis neither in the development proposals, thus separate development projects should be launched depending on the business needs and on right time in China and the US business operations.

There should be also further development programs in each team in the research organization: Firstly, define and re-define role's responsibility for each employee. Tender quality improvement for better order transfer and also tender alignment with process, layout design and listing and engineering team for quality and customer value by motivating and involvement of engineers and technical guys, material management and logistics new way of working with clear role's responsibility of business areas, efficient new operation model for supply team in operation by project team based.

Operation model on project team based for long term strategy: the ideas for the project team are clear with team members according to the work load by work hours and elevators to be delivered yearly, which needs further accurate calculations and study.

Tools development details are not included either in this research. There are many tools development and integration among tools required too, for work efficiency and value creation.

Outsourcing also needs further research upon business requirements.

Organizations and managers face change on a continuous basis especially in volatile environments. Some changes are reactions to external threats; others are proactive attempts to seize opportunities and manage the environment. Organizations should seek to obtain and maintain congruence between their environment, values and resources, making changes when there are pressures from either the environment or their resources (Thompson1993, 697).

People have had the time to more deeply reflect on their experiences and to draw insights from these experiences. These insights may point to significant sources of intangible value and suggest future initiatives (Anderson 2003, 159).

The research on supply manager's role competence needs further study and continuous development in the future by focusing on the core business processes upon business trend and needs.

Furthermore, there is no limit in the world, neither with any research work. Enable to lead readers for more thinking and further discussions on this research, here are two videos by Steve Jobs from Apple Incorporation.

Steve Jobs on managing people
http://www.youtube.com/watch?v=f60dheI4ARg

Steve Jobs explains the rules for success
http://www.youtube.com/watch?v=KuNQgln6TL0

7 DEVELOPMENT PROPOSAL

To compete in the 21st century supply chain through supply chain management and enterprise resource planning integration: supplier development, communication, new operation model approach for an agile supply chain (Hoek 2006, 8).

The supply manager's role development proposals will be conducted by five aspects:

- Supply manager's role development new concept
- Organizational strategy for supply chain full integration
- Change on core business processes: organization, process, technology management and project management skills
- Outsourcing tactic
- Competence approach.

Moreover, the development proposals to be proposed to the management team **by priority**:

Primary

- Role's responsibility define, re-define and re-organize
- Supply manager's role development new concept
- Technical support role, other missing resources search, professional skills training and documentation
- Discipline and commitment deployment
- Process in alignment with practice, interface, visibility and data flow
- Bonus and benefits sharing system between FL and SL
- New operational model on project based, short & long term change;

Secondary

- Technology & Project management skills continuous development
- Competence approach
- Long term strategy, frontline and supply line full integration
- Outsource to India on non-core role like batch documents creating and updating by tools or systems.

In addition, the supply manager's role development proposals are categorized **by time**:

- **Short term strategy**
  - Supply manager's role development new concept
  - Role responsibility's define, re-define and re-organize
  - Discipline and commitment deployment
  - Bonus and benefits sharing system between frontline and supply line
  - New operational model on project based, minor change;
- **Mid-term strategy**

- Technology resources and competence: technical support role & competent resources search. Training and documentation for technology competence and supply manager's technical skills and coordination
- Process in alignment with practice, interface, visibility and data flow
- Outsource to India on non-core role like batch document creating updating by tools or systems;

- **Long term strategy**
  - Frontline and supply line full integration
  - Project management skills continuous development for competence
  - Competence approach
  - New operational model on project based, radical change.

7.1 Supply manager's role development new concept

The number one best practice when it comes to managing your supply chain is to have best-in-class people in positions of responsibility throughout your organization. Learning how to identify these people, how to train them, and how to develop them into productive employees has become increasingly important-as well as much more difficult-as supply chains have gone global. (Blanchard 2010, 228.) From theory to practice, to develop supply manager's role new concept:

Highlight supply manager's core role
Core role: communicate and collaborate with frontline, financial issues, plan and organize for problems solving, coordinate technical solution creation, design and engineering control and design quality review, internal coordinate with other designers and units, meet customer's requirements.

Eliminate non-core role
Non-core role: involving with tender phase on target tenders, create and update documents by tools, templates or to SAP. Follow-up internally with other units for problems solving especially in project follow-up later phase, production supervising, shipping time schedule follow-up and communicate with frontline and customer. Support to site installation and installation documents. All non-core roles could be moved to supply engineers and other support roles, or even outsourced to India.

According to supply project delivery phases, supply manager's core role and non-core role developed status are mainly:

Table 5 Supply manager's core and non-core role by project delivery phases.

Project delivery activity description	Status classification	Tender phase	Project start-up	Engineering & preparation	Delivery	Project closing
Participate tendering on target tenders	Non-core role	x				
Project start-up meeting	Core role		x			
Specification and tender clarification	Core role		x	x	x	
Schedule planning (DGP and solution creation planning)	Core role		x	x		
Resource planning and coordination (SL project team)	Core role		x	x		
Project start: create and update documentation (CSP, DGP, VPN, MPR)	Core role		x	x	x	x
Project start: create and update documentation (DIR, material forecast)	Non-core role		x	x	x	x
Project start: Sales order create and update to SAP	Non-core role		x			
Sourcing actions and SLQ plan (availability clarification, Pre-ordering)	Core role		x	x	x	
Quality actions and SLQ & CTQ plan (CTQ fol-low-up, inspection plan-ning)	Core role		x	x	x	x
Approval engineering coordination	Non-core role		x	x		
SAP maintenance: scheduling, engineering activities, pricing	Non-core role		x	x	x	

Support FL PM solutions and design creation	Non-core role		x	x		
Support solution creation	Non-core role			x	x	
Solution creation coordination and Pre-engineering	Core role			x	x	
Customer samples and mock-up inspection	Core role			x		
Specification and design changes coordination	Core role		x	x	x	
Technical clarifications for FL and customer	Non-core role		x	x		
Financial control (cost follow-up, price changes, quotations, MRP reporting)	Core role			x	x	x
Order engineering coordination and follow-up	Non-core role				x	
Design quality review	Core role				x	
Solution creation related manufacturing coordination	Core role				x	
Quality inspections (CTQ)	Core role				x	
Delivery (COT) and Logistics follow-up	Non-core role				x	
Feedback handling	Non-core role				x	x
FL Installation problem solving support	Non-core role				x	x
Closing meeting and Lessons Learned	Core role					x

The author clarified and finalized core role and non-core role for supply managers by project delivery phases, which the research organization didn't address before in any documents officially. Thus supply manager's role development new concept will add definitely context to the thesis and

especially add value to supply manager's role development for Major Projects.

7.2 Supply chain change strategy

Here change means for a full chain change strategy between frontline and supply line through integration.

7.2.1 Integration between frontline and supply line

Supply manager's role development starts from integration between frontline and supply line, the reason is that the root cause originally for the problem of two business lines are separate financially in full chain delivery, and has definitely great impacts on supply manager's role.

Full chain target between frontline and supply line means from sales funnel to supply line until to the end customers, where the problems start even before getting the order into house until the end of the delivery, even after delivery service, feedback.

A successful supply chain management requires a change from managing individual functions to integrating activities into key supply chain processes. Supply chain business process integration involves collaborative work between buyers and suppliers, product development, common systems and shared information. But in this research, common systems or tools are not studied in details but just listed for further research.

Supply chain creates value for those that organize the networks. Value is the additional revenue over the costs of building the network. Co-creating value and sharing the benefits appropriately to encourage efficiency and competitiveness is a key challenge for a supply chain.

Long term radical change

If the integration happens between frontline and supply line for the research organization supply chain, supply line will become one resource for frontline only, and the advantage will be every problem become so small because they could agree together and find the solutions finally for customer value not just argue and quarrel for their own benefits, cost could be reduced by better communication and collaboration work, information flow works better and shared information, common system, everything sounds so perfect, a real perfect world.

However, everything has its advantages and disadvantages, in an integrated supply chain, there will be less competition, people are not competing that much anymore, same benefit sharing, same bonus, then it is difficult to have any innovation or inspiration for change internally. Maybe that is one of the reasons that the Corporation of the research organization would like internal companies compete with each other for improvements, change and innovations and value creation for shareholders.

The vision and strategy need to be a long-term plan not just a short-term response to problems in the organizational environment as they arise. In the "ascendant" organization the leadership role involves challenging the status quo and being determined to succeed while taking into consideration all the other stakeholders in the business (Winterton 1999, 72).

Long term benefits include:

- Faster "time to market" through better scope control
- Lower overall program risk
- Emphasis on customer satisfaction and value-added rather than internal competition between functional groups
- Contractor assisting the customer during strategic planning activities.

(Kerzner 2006, 153-154.)

7.2.2 Benefit and bonus sharing system between frontline and supply line

A short term change

From long term plan to the real world, besides the long term radical change strategy, there should be also solutions for the problems in short term, therefore, re-arrange the benefit and bonus sharing system between frontline and supply line, which matters mutual interests, and supply manager will be benefited that project manager has more clear responsibility for his role and especially on must do issues.

Measurement

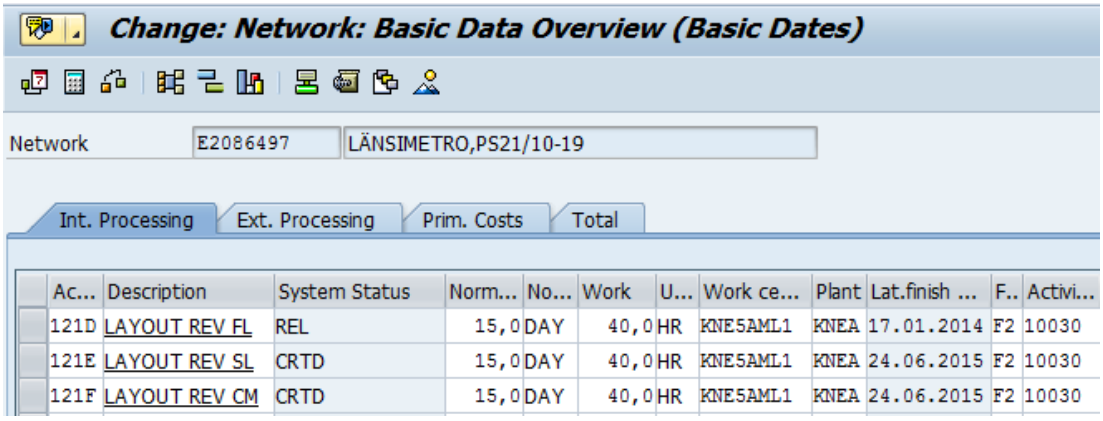
Firstly, sharing benefit and bonus percentage between frontline and supply line should be decided by the management.

Secondly, set up the metrics for the work done and the mistakes of the root causes in SAP system to clarify whose responsibility and guilty part for bonus and benefit measurements. Activities to be created for measuring by different categories of own work center:

- Customer revision
- Frontline revision
- Supply line revision.

Thirdly, re-design and deploy for further development.

Table 6 Activity creation in SAP system for measuring work done.



Ac...	Description	System Status	Norm...	No...	Work	U...	Work ce...	Plant	Lat.finish ...	F..	Activi...
121D	LAYOUT REV FL	REL	15,0	DAY	40,0	HR	KNE5AML1	KNEA	17.01.2014	F2	10030
121E	LAYOUT REV SL	CRTD	15,0	DAY	40,0	HR	KNE5AML1	KNEA	24.06.2015	F2	10030
121F	LAYOUT REV CM	CRTD	15,0	DAY	40,0	HR	KNE5AML1	KNEA	24.06.2015	F2	10030

Implications
Frontline and supply line is going for integration as one unit financially. This is a long term oriented radical change plan, it could happen when times come and if both partners are working continuously to that direction, of course, it depends on the decisions by the management.

Short term change in benefit and bonus sharing system could happen even next year if the management makes the decision.

On supply manager's role, it will be naturally developed to some extents with the new ways of working, strict rules and norms decided by the management.

7.3 Supply chain integration into core business processes

Since supply manager plays the critical role in supply chain mainly in the core business processes, the process works or not will directly affect supply manager's role and competence. These changes could be long term, mid-term and short term issues.

7.3.1 Organizational strategy

Value is the name of the game. Strategic change initiatives are intended to unlock the value of human capital and create value for the business (Anderson 2003, 2).

The research organization's human capital changes on role's responsibility define, re-define, strict discipline and employees commitment will help to create value.

1. **Define and re-define frontline and supply line's roles on must do issues**

Necessary issues for defining and re-defining role:

Updating technical specification document, KONE binder, it is most important document for supply manager's role.
Issuing DG Plan together with frontline, let's say it is the second important document for supply manager's role.

Technical specification (CSP) management:
In frontline, not all project managers are competent enough or don't have time enough or not interested in technical document management issues. The proposals: technical trainings to frontline on how to issue CSP by high quality as well as the Corporation process trainings. Be strict with discipline on the issue, could be connected with bonus system also for better quality and commitment.

If frontline cannot manage it with good quality, supply line takes over the task by organizing a technical specification work team in Hyvinkää with all technical crew members needed to do it, which will help to reduce unqualified technical specification in order phase. To some projects there are 20-30% mistakes from tender to order phase according to interviews.

Technical specification in process by supply line: If the technical specification mistake is less than 20%, then follow the CSP in supply project management. Otherwise, follow a new CSP process proposed by supply manager Tuomas Kuusela, which is then another project to be launched in the future. CSP process development is valuable from technical document perspective, especially as a guide for new supply managers. The insights of CSP process in project management: elevator specification information currently used are mainly in EngCalc, 10Tool, CSP, Main data list, layout drawing, M-drawing, FL SAP, SL SAP, SAP long text. Every tool might have its own version of CSP elevator technical specification because of wrong data source or not clearly marked data version, which will certainly cause inconsistent with the correct CSP version.

2. Define supply manager and supply engineer's role
Supply manager is taking care of mostly core role like financial issues, communication and collaboration with customers and frontline; internally coordinate with other units, and work more on project start and project clarification and engineering solution finding phases.

Supply engineer will do more on non-core role, issue and update documents to template, create and update SAP data, and takes over most part of the work from supply manager's in project follow-up phase so that supply manager could start even another new project meanwhile. According to the interview statistics analysis, 11,49% non-core role for SAP data creating and updating, and 1,89% documents issuing and updating are expected to be re-organized to supply managers or outsourcing.

3. Define, re-organize and motivate key stakeholders and search for new resources
Chief designer should have a bigger role and focus on core role, not just a title. He or she could also play the technical solution support role by coordinating layout work and visual designs from Hyvinkää factory. It is at

least 10-20% cheaper that chief designers lead couple of junior designers to do the tasks and chief designer is mainly on coordinating, planning and guiding core tasks. Every project team should have a chief designer, who might be allocated to be responsible for coordinating 5-10 projects. Recruit chief designer resources more.

Visual designers should be better motivated and collaborated by supply manager focused, not allocate visual designers by each project. By this way, organize logically such way that supply manager has one car designer for many of his projects, but not allocate10 different car designers for 10 different projects of a supply manager.

Technical solution support and quality technical support roles are to be recruited out of the Corporation if not available inside. Alternatively chief designer could be trained and nominated as technical support role if the role is not available.

Role responsibility on business areas for Material management and logistics experts should be defined. Collaboration and information flow with the research organization should be improved by some events, workshop or trainings between the departments.

4. Discipline, commitment and motivation of employees

- Target for each employee's responsibility and tasks should be clarified by team leaders in each team.
- Work tasks have to be planned with a feasible figure.
- Measure the efficiency, workload, quality and competence.
- Reward system should be fair and according to the contributes.
- Motive employees with more team happenings, promotion, recognition and acknowledgement for inspiration and better commitment.

5. Job rotation for knowledge diversity and innovation driven force

Besides role and responsibility define and re-organize, motivate, discipline and commitment of employees, more opportunities should be offered for skills diversity beyond skills professionalized, job rotation is to be more offered internally and externally. According to one interviewee, within 5 years in a role, there should be opportunities offered for other roles considering leanings, professional skills scope and inspiration and innovation competences.

Internally, supply managers volunteered could work on tender for a fixed period, which will help him to be better qualified and competent in project management.

Externally, supply managers from Finland could work in UK for example closely in location with project managers in project start-up phase, 2 days start-up meeting is not enough for clarifying problems in project beginning especially for the challenging project, and in project follow-up phase, they are back Finland again. Also it could be further studied if a supply manager could be exchanged as a project manager in frontline, an ambassador

from supply line and interact the role's process flow between frontline and supply line. Alternatively he could even works as a project manager in a certain frontline where lack of competences.

The impact of a diverse population on the potential creative output of a work team (and taken to a higher level, the entire organization) remains the same. The more diverse the experiences, perspectives and world views of the various members of a team working on a shared objective, the greater the likelihood of getting a creative mix of ideas from which to develop an innovative solution. (Emerald Insight Staff 2005, 226.)

6. Launch a new supply line project operation model

A. Long term orientation project team based model takes place of present business based operation model. Project team members are who are working in a team could be for example based on more specific project business areas: Asia, Middle East, Europe & Russia, North and Latin America & others, modernization and Marine. Make supply team work more efficiently, with clear responsibility and for role's competence and customer value creation.

A team is more than just a group of people with a common project. A team is made up of individuals with complementary competencies, who are enthusiastic about a shared goal. This goal includes specific and operational performance targets for which the team players hold each other responsible. It is also important that team goals are well defined, operational, and directly related to the company's overall goal/vision. If this is not the case, then good results cannot be anticipated from the team's efforts. (Jespersen & Skjøtt-Larsen 2005, 72.)

There are several project teams in each area team, and every project team will be organized and the skilled resources are needed. For example for one China supply line project team:

Project manager: one project manager is allocated for one project or several projects. Project manager belongs to frontline project organization.

Supply manager: one supply manager for one project and counted by the work hours 1300 yearly averagely, and elevator delivery amount roughly 30-50 pcs yearly according to the project challenges and SM's experiences. SM could have 5-10 projects in operation, but focus on the core role, financial, communication and collaboration with customers and frontline, internal coordinating with chief designers, visual designers for technical solution and engineering in the project start-up and technical clarification and engineering.

Supply engineer: one or two supply engineers needed for one projects or more, calculated on the work hours 1300 yearly. Supply engineers will support SM on daily routine tasks, issue and update document to template and create and update SAP data. Supply engineers play non-core role and take over more responsibilities in project follow-up and delivery phases,

like to coordinate with designers internally and check the productions and logistics delivery time schedule etc.

Tender engineer: one tender engineer's role needed at least for one project, or could work for several projects meanwhile as non-core role in project order phase, who will be involved in the projects from beginning to the end with the project teams. Besides tender phase core role on tendering, in order phase, he or she could meanwhile do VPN pricing, and could also be trained for some SAP creating and updating tasks, as well as the project follow up tasks like supply engineer's role when needed. By year 2012 tender done calculation, the work hours per tender engineer is 875 hours roughly yearly.

Chief designer/technical solution support
Chief designers have to be nominated for each project, and could be involved with 5-10 projects by coordinating, planning from project level and delivery follow-up, focusing on core role, and guiding layout designers to do the daily tasks, which will have 10-20% cost saving comparing with chief designers doing the design tasks.

Sourcing, logistics/quality experts
The resources will be allocated to each project team as the operation now, but quality technical support resources required.

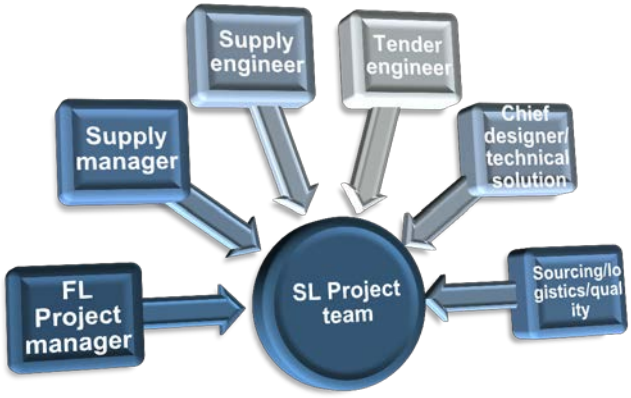


Figure 12 New operation model based on supply line project team

Implications

The new operation model based on project team reminds us of Apple Inc., an American corporation that designs and manufactures computer hardware, software and other consumer electronics, which one of the leading world class company in smart technology. It helped Apple to rebuild its image and made Apple not just a technology company but also a cultural force. It inspired people to chase their dreams in spite of great difficulty and keep moving on to make the world different.

There are mainly two kinds of competitive advantages, which are cost advantage and differentiation advantage. Apparently, Apple adopted the latter one. For the research organization, it is not only the differentiation advantages for competence, but also cost matter concerned. it has been trying to make the operation model different for more efficiency, cost reducing, customer focus, meanwhile for differentiation according to the ever change customer's requirements in technology design and time schedule change.

As addressed by Winterton, senior management is focused on long term run competitive strategy and for competence. Nevertheless, the rapidity of technological developments and the dynamism of markets render traditional specific sources of competitive advantage liable to obsolescence and being superseded by innovation. As a result, sustainable competitive advantage derives more from the ability of individuals and organizations to adapt and learn faster than the competition. In order to promote this learning, development must therefore be designed to support the strategy. (Winterton 1999, 73.)

B. Short term re-organization on the present supply team operation model

The project team operation model is as now, but to make some changes with the roles or tasks. According to the interviews of supply managers, re-organize the team members preferably working by pairs between supply manager and supply engineer, by which they have substitute for each other, share knowledge and carry out project together.

If a sense of pressure is the push, then a compelling vision is often the full factor. An effective vision delivers an attractive picture of the future and draws people in to support its achievement. Leaders can generate a sense of excitement through their personal values and vision. (Goffee & Jones 2006, 181.)

Supply manager: involved already in tender phase on the targeted tenders. Focus on core role in project start-up phase and project technical solution finding coordinating and engineering and financial issues. Communicate and collaborate with customers and frontline externally. Remove the wastes of non-core role from supply managers.

Supply engineer: support supply manager on non-core role, take over non-core role in project follow-up phase like internal coordinating with designers of Hyvinkää factory, production supervising and logistics shipping tracking and time schedule follow-up. Make it clear about supply engineer's responsibilities on non-core role.

Tender engineer: should be involved from project tender phase until the end of delivery in order to have a bigger picture on pricing issues, meanwhile being trained as a supply engineer's role if needed: issue and update documents and SAP data or coordinate internally with other units. A separate VPN pricing engineer is necessary only for the mega projects. There is no good reason to have two different tender engineers to do tender and

VPN separately. VPN engineer not involving with tender initial phase has difficulty to know the whole picture of tender. Neither pricing quality nor VPN can be ensured or controlled. Remove the wastes also from here and ensure quality.

Benefits of competitive strategy for definition of role's responsibility
As a result of competitive strategy – change management, develop a new operation model for supply area teams, define and re-define supply manager's role and key stakeholder's role, enable supply chain to gain profitability, efficiency, on time delivery and role competence.

Change strategy for competitive advantage
Business strategy is all about competitive advantage. Without competitor there would be no need for change strategy, for the sole purpose of change management is to enable the company to gain, as effectively as possible, a sustainable edge over its competitors – to alter a company's strength relative to that of its competitors in the most efficient way (Thompson 1993, 11).

7.3.2 Process alignment, visibility, interface and accountability

Project start-up meeting is a must do issue by frontline and supply line, which should be organized by frontline for face to face meeting on most projects, or online meetings needed for smaller volume order projects. Continuous online start-up meeting is needed afterwards for challenging projects, for example to work out and make clearer about the open issues left during project start-up meeting.

Improve the process quality of tender transfer to order

- Tender done is in compliance to the research organization process.
- The management should decide the target tenders for lead time and quality.
- Technical specification incorrectness and open issues should be reduced to less than 20%, which could be achieved via making technical clarification detailed and qualified enough.
- For tender quality, tender engineers should have more technical trainings and get to know better the corporation process.
- Tender documents have to be documented and marked as valid one for order phase references.
- Tender document library is proposed for collecting non-standard special technical tender documents.
- Order transfer documents and contracts related should be signed before transfer.

Interface is to be built up on many issues for process development. For example, China supply needs importing quality certificate and importing material pricing support from Finland supply chain organization. Both China and Finland supply chain organizations should nominate the first contact point to carry on the issues further.

Visibility is another challenging issue. There are many processes documented in VariPDM, workspace or the Corporation Intra/Internet, but it is more important to make the information flow and share the knowledge and let the process more visible between frontline and supply line and the research organization employees in supply chain by collaborating, trainings, workshops, online training etc.

Simplify process and make life easy. More standardized rules, regulations, integrated tools, harmony operation models etc. rather than non-standardized and individuals.

Process alignment demands that supply managers should make plan for each project on sourcing and quality planning and especially on those special components that have design and sourcing challenges. 100% execution is required.

7.3.3 Cutting-edge technology and competence

Special components design for customer value
Apple Incorporation Core Competencies are their design and technology. Apple developers think different and introduce new products into the market. The products are usually heavy on the pocket but Apple has the brand name and quality of service impact, non-stop cutting edge technology. For the research organization, special design upon customer's ever changing requirements is also a challenge in technology management.

Besides new products release to the market, newly released product "Ultra rope" for example, taking place of heavy and inefficient old style steel rope shows the technology department research results, it is also required that supply managers and other key roles could manage the technology in delivery chain and help customers to find a solution.

Competence in technology management
For the special design technical challenges, resources need to be recruited especially to the competent technical solution role. Alternatively an experienced chief designer is as a coordinator among other designers related with a project to find the solutions for input data for listing and engineering for data quality and less mistakes in production. The target is to meet customer's requirements. Trainings are needed of course to have such a competent role.

Globalization refers to the shift towards a more integrated and interdependent world economy. Globalisation has two main components: the globalization of markets and the globalization of production (Hill 2002, 6).

In addition, from world global production point of views, the advent and power of connection technologies – tools that connect people to vast amounts of information and to one another – will make the twenty-first century all about surprises (Branson 2011, 253).

Technical documentation
Because there are special design requirements for each C-process order, which challenges not only the special design but also the technical documentations. MP employee should be more motivated to collect especially the experienced designs or technical idea to workspace Application Continuous Improvement (ACI) for other's reference and special design technical variation management. Further development required for knowledge sharing and information flow. Moreover, most contributed employees should be recognized and rewarded also by the management team for motivating people in technical documentation.

Other documents management
Supply engineer should take the role on technical specification, DG plan and VPN key documents check. Supply engineer should take the role on technical specification, DG plan and VPN key documents. SE should help to check, document and follow up enable to remove the non-core role from supply manager for efficiency, data quality and role's competence.

Site installation instruction for special design order is required. Technical support role on site is the right person who could be responsible for and support from supply line is available if needed. The documents should be documented to VariPDM for later references by a responsible person, including also maintenance instructions and user instructions.

Documentation role
The role could be supply manager's role partly on each of the project management. Alternatively it could also be a separate responsible person allocated to the tasks meanwhile doing his or her main tasks. The decision should be studied further and decided by the management team.

The knowledge management network began as an information exchange tool for the company's engineers. It was transformed into a corporate wide strategic asset with innovative design features that reflect the manufacturer's business environment and contribute to the integration of knowledge management into the functioning of business processes and decision making.

Knowledge management enabled people to quickly engage the expertise and knowledge necessary to solve complex technical problems (Anderson 2003, 196-197).

According to Thompson, Michael Porter (1985) further suggests that technological change and in particular IT, is amongst the most prominent forces that can alter the rules of competition. This is because most activities in an organization created and use information.

Technical and other documentation management creating value to customer
The value to customer is embedded within the product delivered to the customers together with providing the technical and other documents like user's instruction, site installation instruction etc. Without the necessary

documents provided to customers means incomplete service package of a supply delivery or imperfect after sales service. How could a customer buy a product without product instructions, installation or maintenance instructions?

7.3.4 Role's competence in project management

Here project management means more supply manager's skills in project management.

Being open to feedback from customers is very important, because not only it finds out process incompleteness or technology incompetency in delivering products, but also the research organization could analyze and figure out the core business processes for development.

After interviewing on more than 10 supply managers, they evaluated by their own the top 4 core role by category: planning and organizing skills, communication and collaboration, problems analyzing & solving and technology skills & coordination.

For supply manager skills development and role's competence, the further actions are required:

- Strengthen planning, sourcing and supplier knowledge
- Demand 100% actions to SLQ and CTQ planning, sourcing and quality
- Improve communication and collaboration skills
- Train technology skills
- Be customer focused
- Be open to feedback
- Develop change management skills
- Lifelong learning by doing
- Outside organization learning
- Professional trainings.

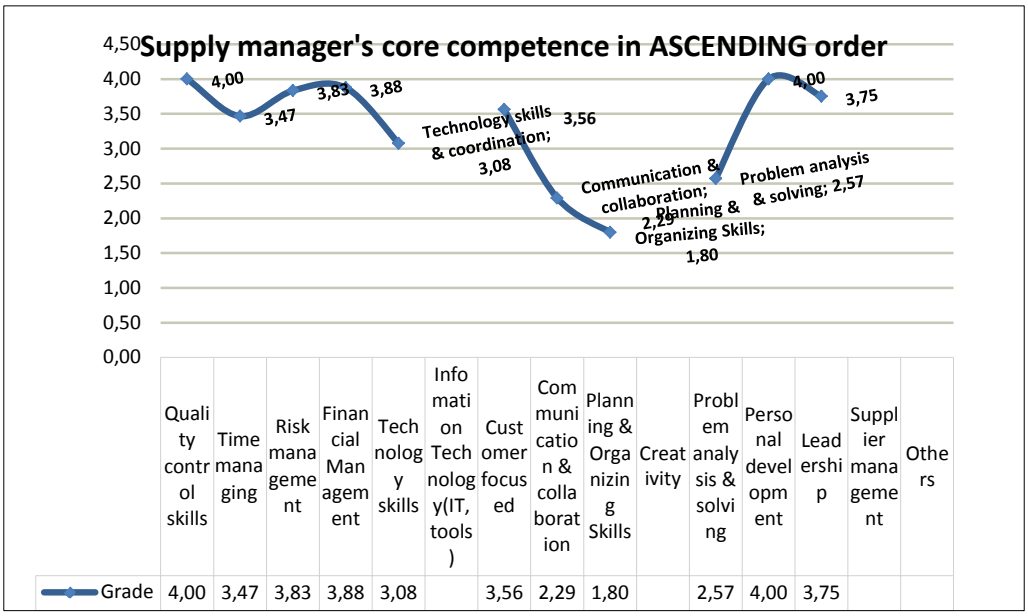


Figure 13 Supply manager's role competence

Diversity can be powerful to enhance the firm's knowledge base and its sources of competitive advantage. Diversity works to enrich the firm because it will be able to tap into multiple sources of talent, ideas, insights and skills (Pitts & Lei 1996 152).

7.4 Outsourcing tactic

Outsourcing has proven effectiveness in accomplishing several goals: to reduce costs, to generate cash, to focus management's attention on the organization's prime purposes, to take advantage of an outsider's expertise, and to help expand globally.

The firm builds its strategy to deal effectively with the particular national markets with such restrictions, and places extreme attention on the host government in order to ensure that protection remains in force.
(Porter 1980, 294-295.)

Business value counts from the outsourcing agreement's outcome attainment from the financial/shareholder view, external customer/marketplace view, organizational learning and improvement view, and internal process improvement view (Butler 2000, 68&219).

What to outsource
Let's see what can be possibly outsourced for the research organization to improve effectiveness, competitive advantage, business value and competence.

Firstly, according to the interview statistical analysis, 44% outsourcing demand is for documents and SAP issuing and updating. The idea is clear

from the figure below, and which could be a good reference for the management to consider and decide the outsourcing areas.

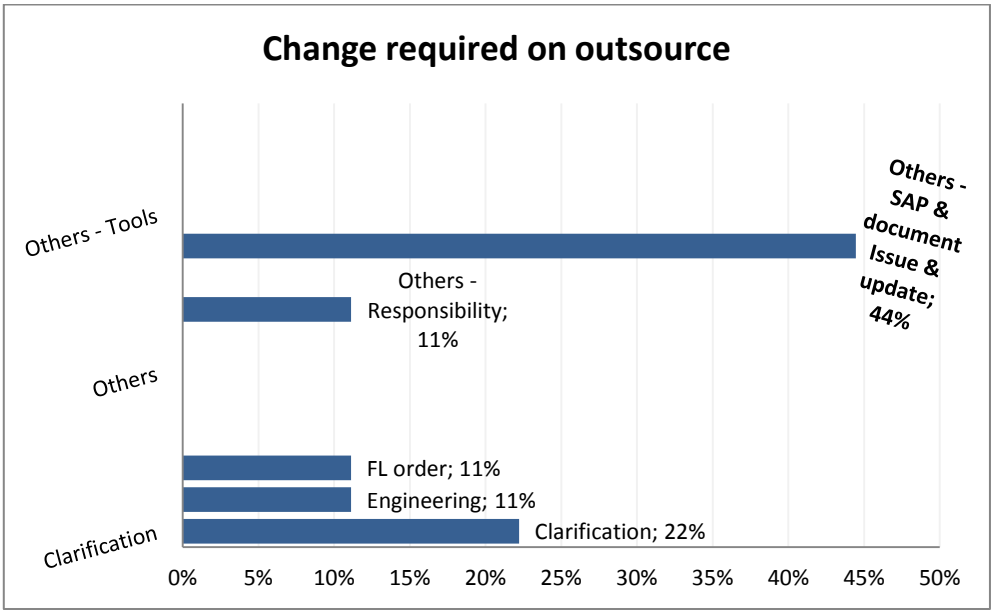


Figure 14 Change required on outsource

For outsourcing to India, it depends much on the tasks, which have to be routine, frequent repeated and time consuming but easy to be given. The possible outsourcing tasks would be:

- Check documents related with elevator order check and fill in QD-22.640 form tasks in case a volume order project.
- Create and update batch data in SAP according to given instructions or templates.
- MPR report filling to Excel template could be also outsourced unless the integration happens among SAP, VPN and MPR.
- Technical specification, DG Plan documents update (after initial version done) could be done by supply engineer or outsourced if the developed template is ready
- Other possible tasks.

Solution creation for non-standard material required by customers (China):

- Outsource (expert or specialist) for non-standard material solution creation

However, after analyzing the feasibility, it would be good to start with the following outsourcing issues initially on supply manager's non-core role:

- Check documents related with elevator order check and fill in QD-22.640 form tasks in case a volume order project.
- Create and update batch data in SAP according to given instructions or templates.

S-Plan before point 2a **order check,** including technical documents check, time scheduling and long text instructions given to SAP on every elevator, document check results will be filled in the form, which will take 1-2 hours per elevator, and the documents related:

- CSP (technical specification)
- Layouts
- M-drawings
- Order form
- Other documents for specialties.

At present, order check firstly done in Finland and then go to India for listing work. However, if the above mentioned documents are checked firstly in India based on the developed document templates of reduced checking criteria, the technical issues are accurate and in compliance with each other, which will assure CSP technical document accuracy for listing and engineering. In case any problems, supply managers will help to find technical solutions for input data. Supply managers will be responsible for scheduling and instructions to SAP. By this way, it will help to shorten the lead time for the whole project delivery according to several interviewees.

SAP data could mainly refer to sales orders creating and updating, time scheduling with network or any other data updating in SAP. But, outsource to India only those batch work, which can be easily given and quality controlled.

How to measure and control the process

- Open activity for outsourcing tasks in SAP system
- Track query, follow-up and evaluate
- Re-design and deploy.

More than these, CTQ document for quality control should be also provided as one key outsourcing document. Further detailed research is still required when going outsource.

Outsource to India

Manpower is cheaper and efficient in India. The author issued a business proposal scenario as below, which is also verified by Summa Ari, Key Accountant of the research organization, it shows the benefits of outsourcing IT tasks to India. Two employees at least are recruited to work in India at the beginning, and one is always a substitute to the other.

A business's cash flows are the result of operations, investing, and financing activities (the same activities that the accountant's statement of cash flows describes). (Silbiger 2007, 245.)

To compare the cost and benefit by cash inflows and outflows, and calculate the cumulative net cash flow by comparing one manpower, a Finnish employee and an Indian employee.

Business as usual: One Finnish employee, salary yearly roughly 35-40 thousand euros excluding mobile, extra facilities.

Business proposal: One Indian employee, salary yearly roughly 25-30 thousand euros including also facilities, rent etc.

Employee amount: two employees to be recruited in real life for outsourcing at the beginning, but in business proposal scenario, only one employee is counted as an example for calculation.

1 = 1 thousand euros

Cumulative net cash flow: in year 5, it is about 97 thousand euros by estimation. Go outsourcing? Go definitely.

Table 7 Descriptions on business proposal scenario.

Business proposal scenario	Descriptions
Cash inflows/Benefits:	
Man power benefit yearly	40 thousand euros (Finnish salary) minus 25 thousands (Indian salary)
work efficiency	Indian efficiency counted by 10% in year 1 and 2, and in year 3, 1,5% increase
Other benefit items	20% saving based on 15 thousands yearly, like mobile, computer etc. Not provided by KONE
Total cashin flows	
Cash out flows/Costs & Expenses:	
Accidental extra cost, sick leave et.	By 0,05% of manpower cost roughly for the first year
travel & other cost	0,02% of manpower roughly for the firstly
Total cash outflows	
Cash flow summary:	
Total inflows	
Total outflows	
Cumulative Net cash flow	The differences between cash inflows and outflows
Note: The figures are cumulative, but the benefits or cost figures are variable between year 1 and year 2 for example, not always the same.	

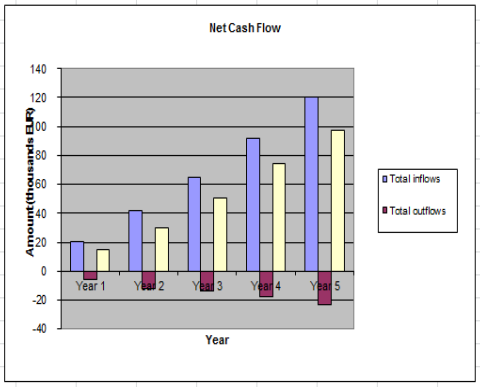
Business proposal scenario for outsourcing to India

Business proposal Scenario

All are cumulative figures from year 1 to year 5, even though there are figure differencs between the years

All are cumulative figures from year 1 to year 5	Year 1	Year 2	Year 3	Year 4	Year 5	unit: 1=1 thousand euros
Cash Inflows / Benefits and Gains						
(40-25 thousand) Man power benefit	15	30	45	60	75	1 manpower, 50% benefit increase yearly, 30 thousands euros per manpower/year
Work hours efficiency benefit	3	6	10	20	30	10% efficiency benefit increase in year 1&2, in year 3, 1, 5% increase
Other benefit items	3	6	9	12	15	20% saving counted on the basisi of cost 15 thousands euros yearly
Total cash inflows	21	42	64	92	120	
Cash Outflows / Costs & Expenses						
Accidental extra cost, sick leave etc.	-1	-2	-4	-6	-8	0,05% of manpower cost roughly for the first year
Travel & other cost	-5	-10	-10	-12	-15	0,02% of manpower cost for the first year roughly
Total cash outflows	-6	-12	-14	-18	-23	
Cash Flow Summary	Year 1	Year 2	Year 3	Year 4	Year 5	
Total inflows	21	42	64	92	120	
Total outflows	-6	-12	-14	-18	-23	
Cumulative net cash flow	15	30	50	74	97	

challenges in efficiency: communication and collaboration, questions asking, quality check



Note:

This is only one manpower comparision between Finnish and Indian employee

Business usual, manpower cost 35-40 thousands euros yearly in **Finalnd**

Business proposal, manpower cost 25-30 thousands euros yearly to **India** (including also facilities, rent etc)

Figure 15 Business proposal scenario

7.5 Competence approach

As global business activities increase, the role (some might say "the burden") of supply chain professionals is expanding to address the need for companies to have strategic thinkers to manage global trade effectively (Blanchard 2012, 236).

Seek for core competence

According to Blanchard, the company Moen Inc., one of the best-known manufacturers of plumbing products, considers itself best in class when it comes to sinks and faucets; when it comes to areas outside of its core competency, however, Moen is willing to look elsewhere for help. The company has developed an internal evaluation model that helps it identify when and where it needs help:

- Is this process or function strategic to our organization?
- Does this process or task provide us with a competitive advantage?
- Do we want to upgrade performance in this area to differentiate us from our competitors?

If the answer to any of these questions is no, then Moen will consider outsourcing that process. Outsourcing is doable if needed, but there are always risks with it.

Outsourcing risks

They are mainly in quality, time schedule and cost.

- Communication and collaboration on unclear challenging issues by phone calls or emails between to partners will be clearly wastes of time. As a result, inefficiency and costly, NOT as business planned or targeted.

- Time schedule cannot be guaranteed always in considering many opened issues to be clarified directly or indirectly also by other partners involved with the business, which is just too complicated in real work.

- Quality is another challenge, which has to be taken into account and pre-plan well enough. Double check from Finnish side is compulsory in order to make sure the quality is as required by customers and the Corporation standard.

- Cost and benefits would be considered from both sides, if managing the outsourcing well, more benefits are to be gained. Otherwise, the result is lost instead of profits.

From long term business strategy point of view, there should be developments in the full chain and core business processes, and for core competences. Outsourcing is not the best strategy, only for short term with some non-core tasks.

Competence orientated: not only project management competence, but also drive for value results, and open to feedback evaluation for better performance and lifelong knowledge learning for more innovations.

According to Porter, competitive strategy is concerned with creating and maintaining a competitive advantage in each and every area of business (Thompson 1993, 10).

The concepts of value chain management have transformed operations management strategies and turned organizations around the world into finely tuned models of efficiency and effectiveness, strategically positioned to exploit competitive opportunities (Robbins & Coulter 2011, 430).

Competence approach in supply manager's role development

Remove the inefficient activities
Remove the time consuming and routine non-core role from supply manager's role and transfer them to supply engineer. It also mean that the research organization has different roles in supply team, which could also be outsourced by prioritizing the role's importance, urgent and impacts on lead time and quality.

Remove the wastes also from other key stakeholders affecting supply manager's role in supply chain excellence.

Remove the wastes from supply manager's role by sustainable improving the process perfectness, technology skills and coordination challenges and project management skills.

Achieve the competence

The concept of the learning organization is valuable because it explicitly links learning with the workplace context in which it occurs. Moreover, writers on learning organizations frequently integrate individual and organizational development.

Individual skills development

- Learning by doing, lifelong learning
- Learning by trainings, online & workshops
- Out of organizational learning
- Open minded and knowledge sharing
- Competence initiative and oriented;

Organizational development on people

- Strategy on developing people for competence
- Human resource development for opportunities
- Employee deployment focusing on core business processes
- Cross-cultural training for multi-cultural competence
- Competence tangible like promotion and rewarding systems.

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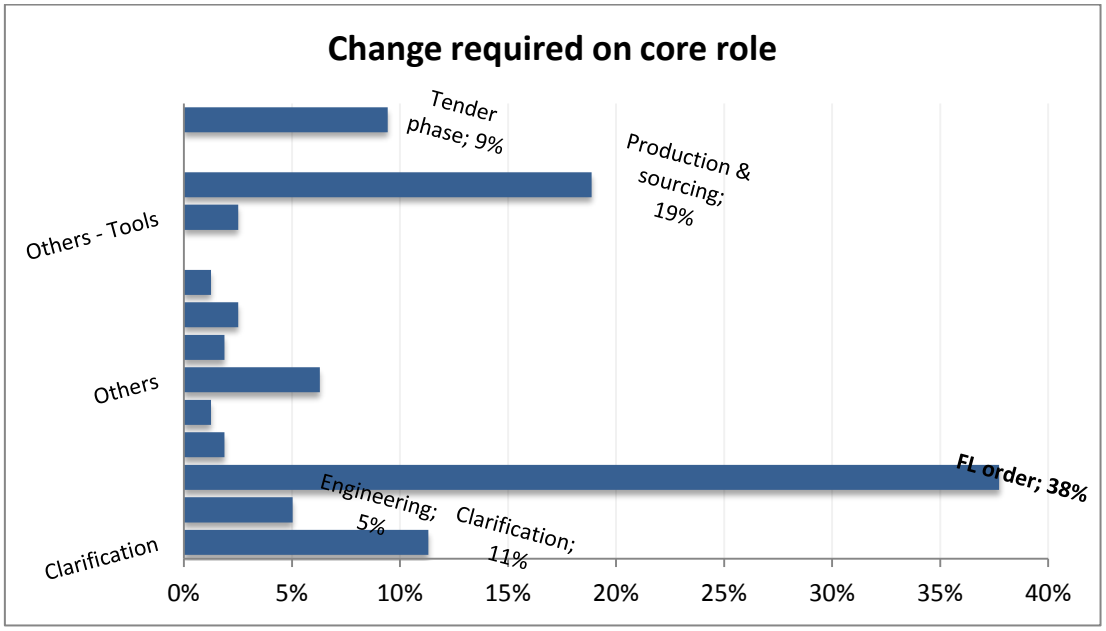
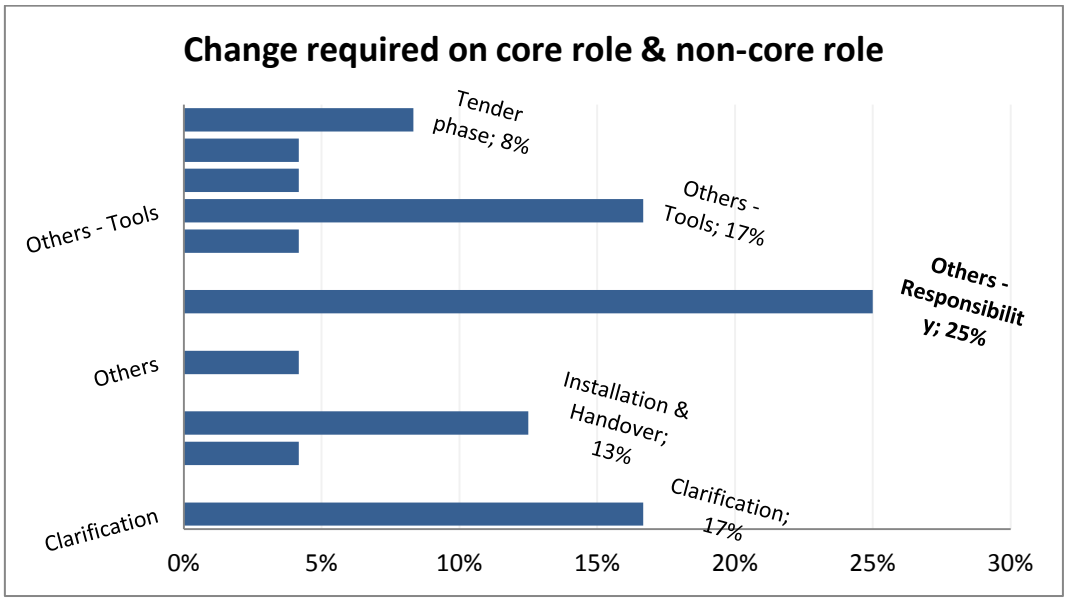
APPENDICES

APPENDIX 1: Interview data statistical analysis on role change

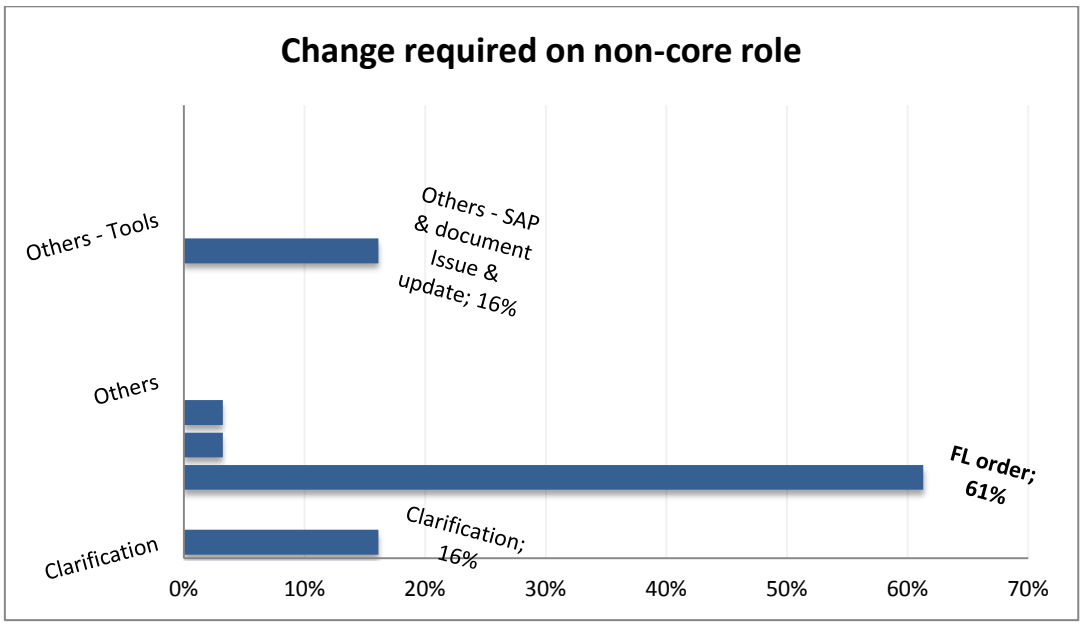
1.1 Change required on core role



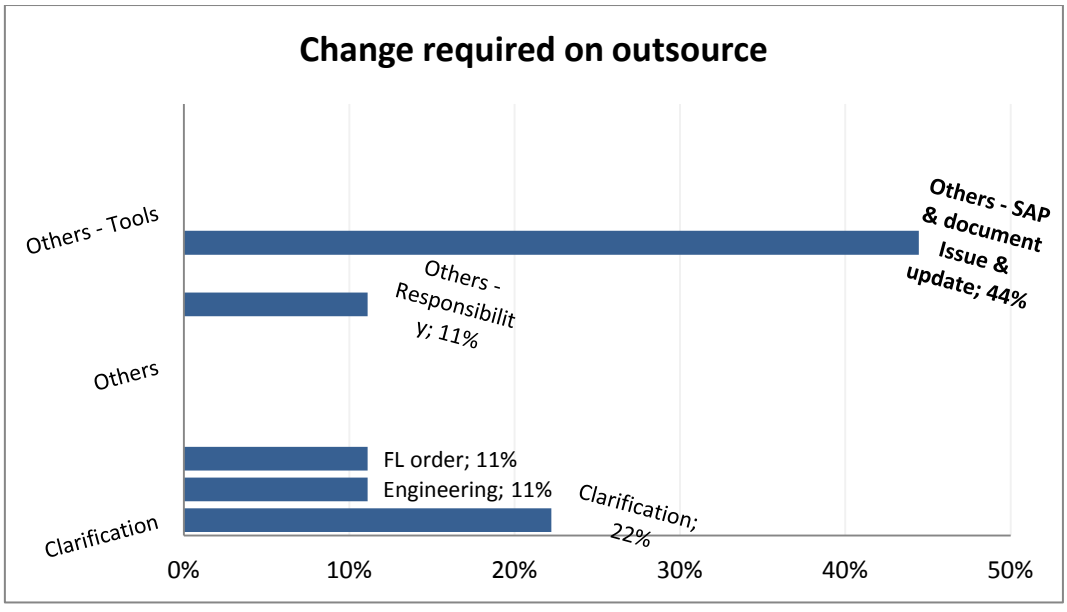
1.2 Change required on core role & non-core role



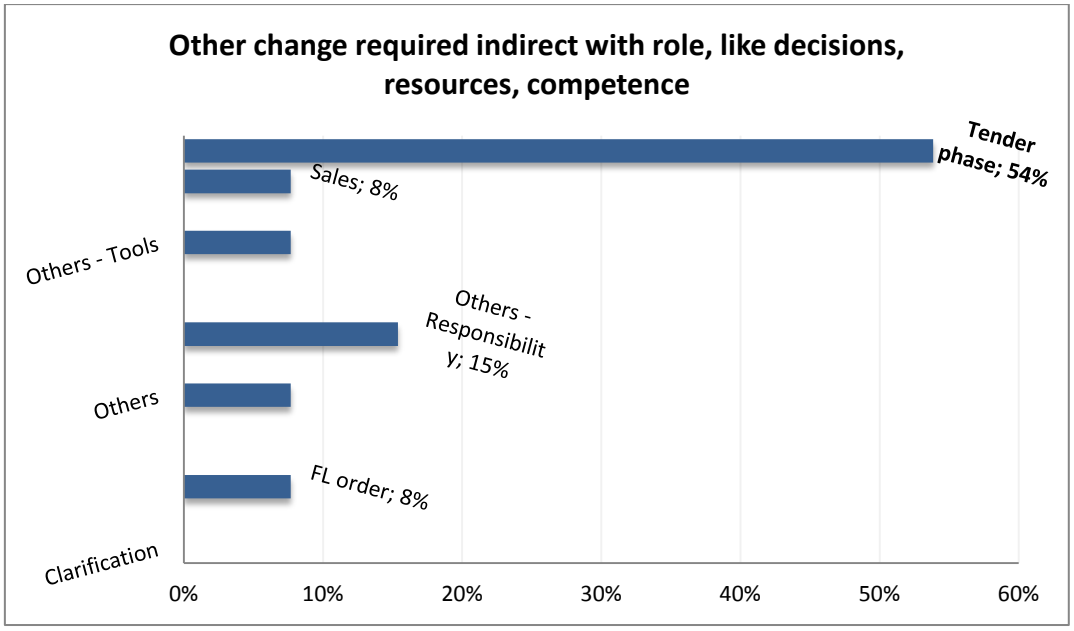
1.3 Change required on non-core role



1.4 Change required on outsource

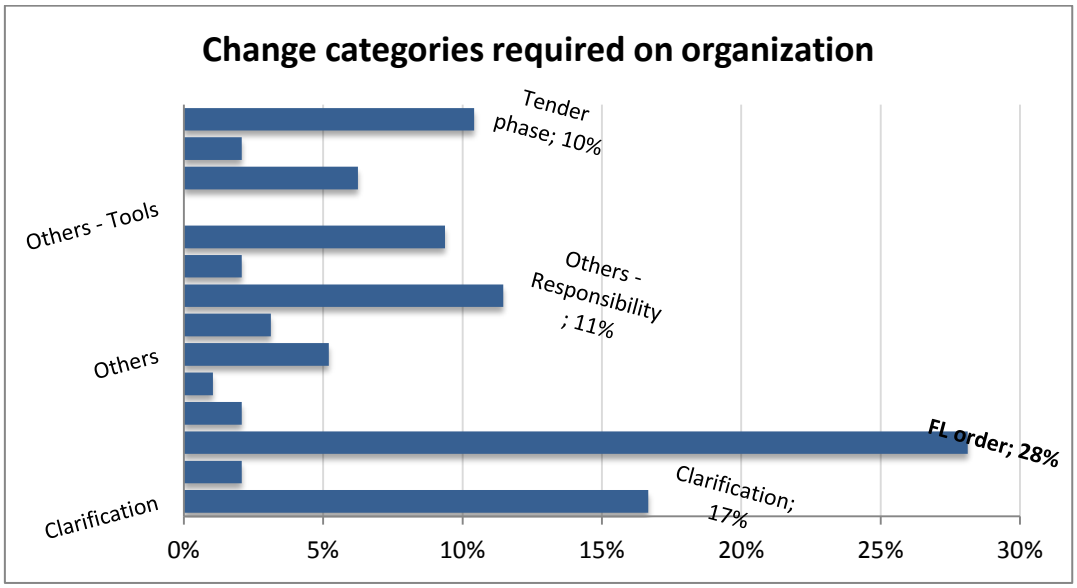


1.5 Other change indirect with role, like decisions, resources & competence

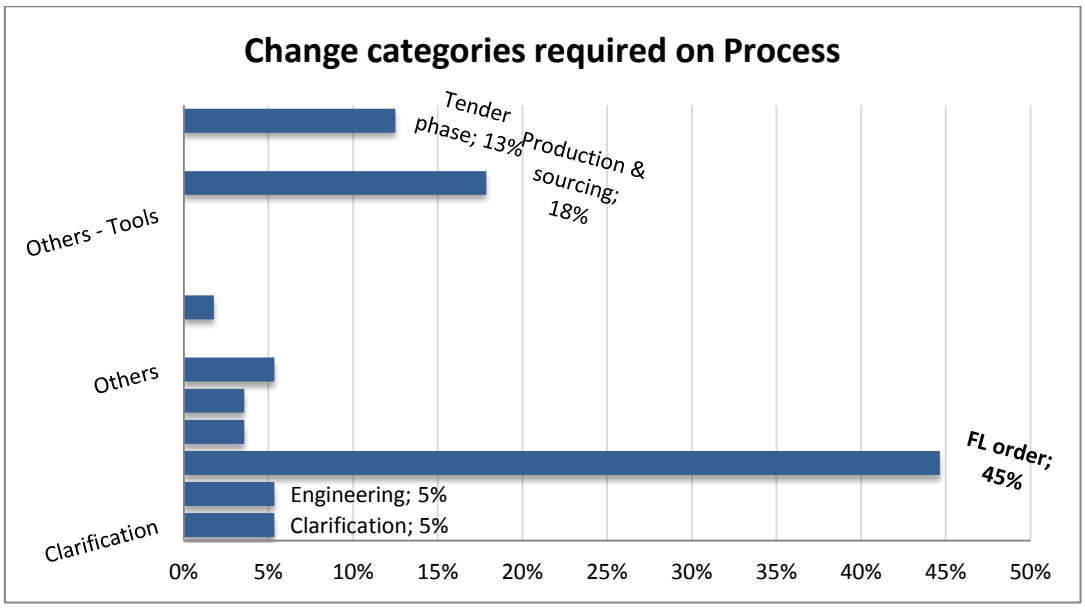


APPENDIX 2: Interview data statistical analysis for core business process change

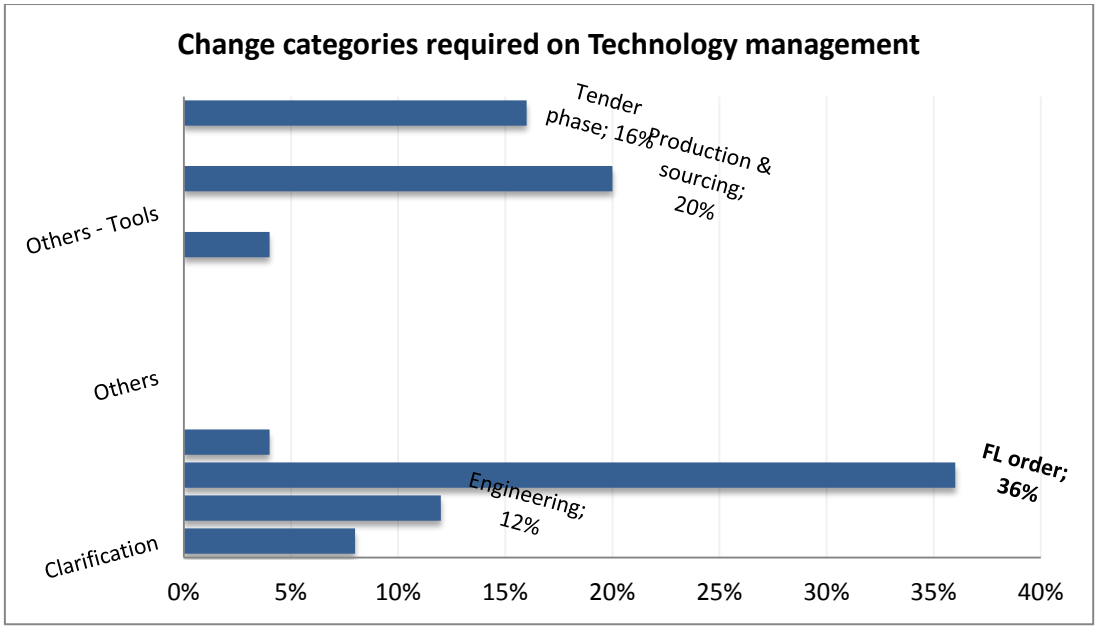
2.1 Change categories required on Organization



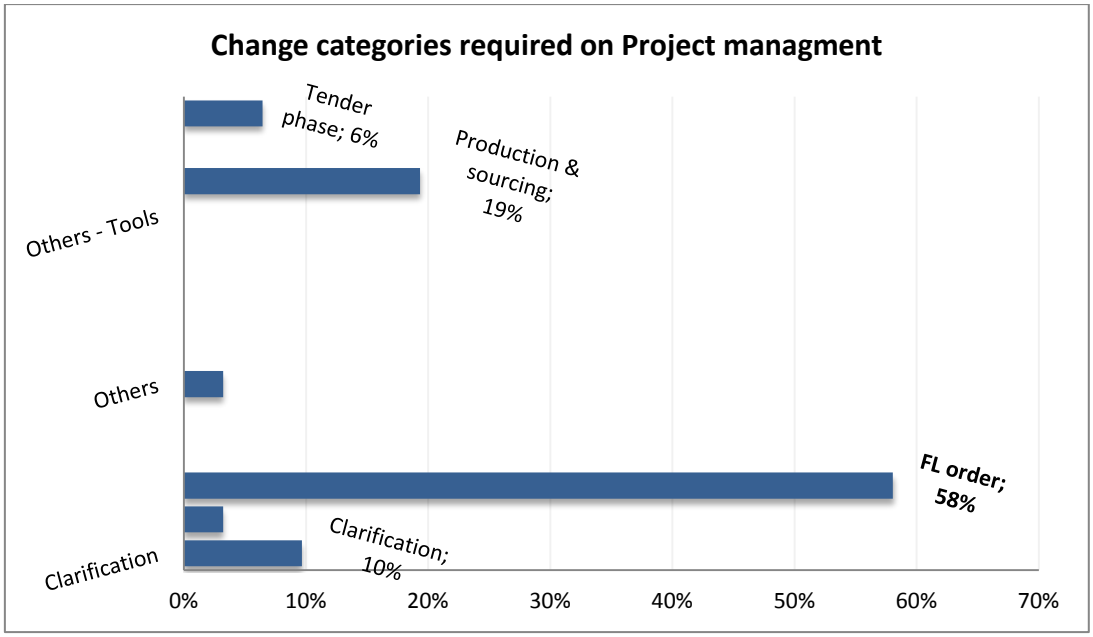
2.2 Change categories required on Process



2.3 Change categories required on Technology management

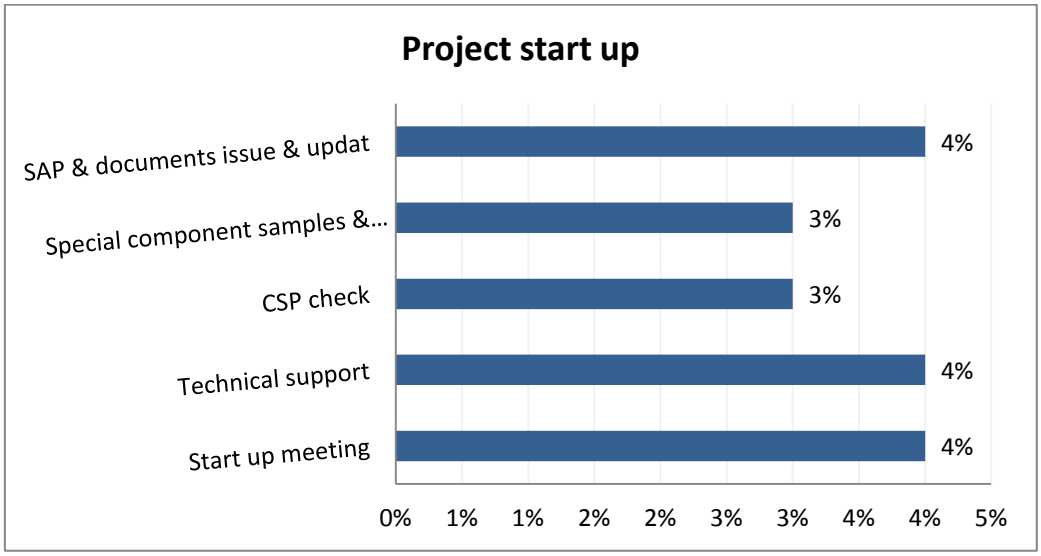


2.4 Change categories required on Project management

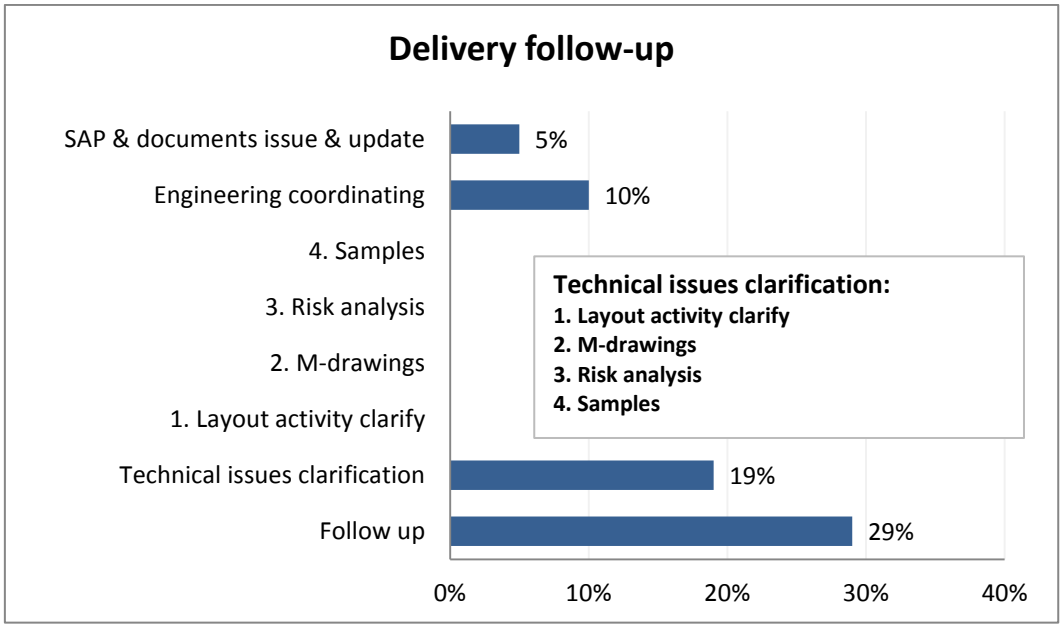


APPENDIX 3: Supply manager's role workload

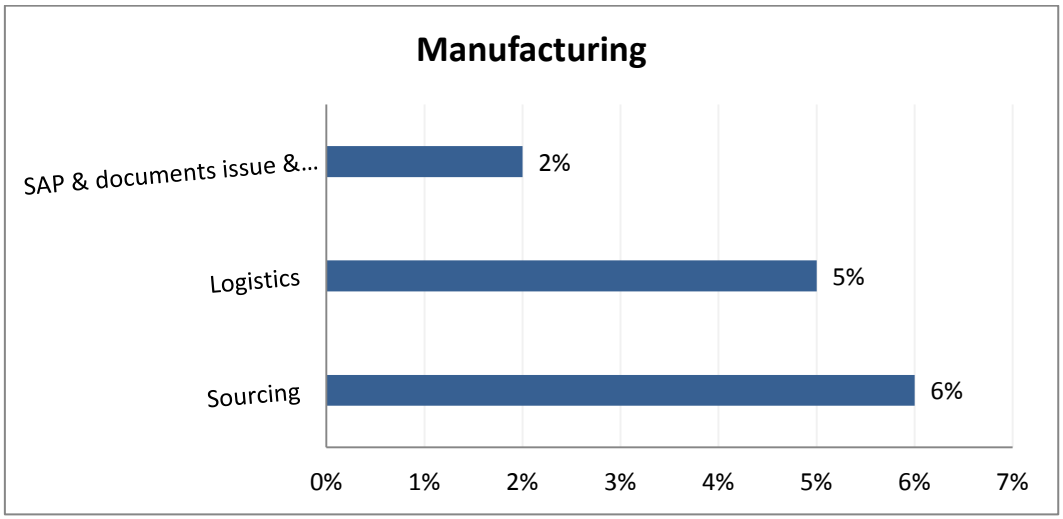
3.1 Workload on project start up



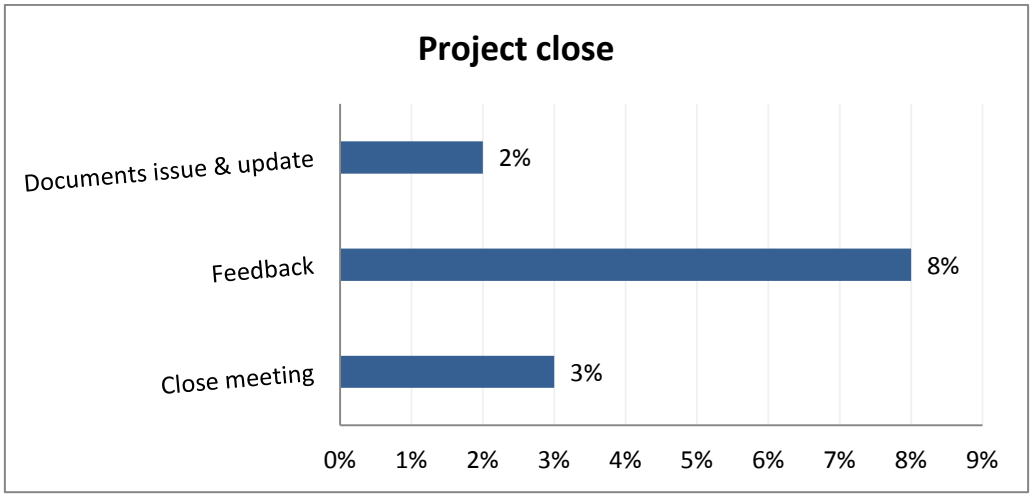
3.2 Workload on delivery follow-up



3.3 Workload on project manufacturing



3.4 Workload on project close



APPENDIX 4: Competence and customer value leveraging throughout supply chain core business processes

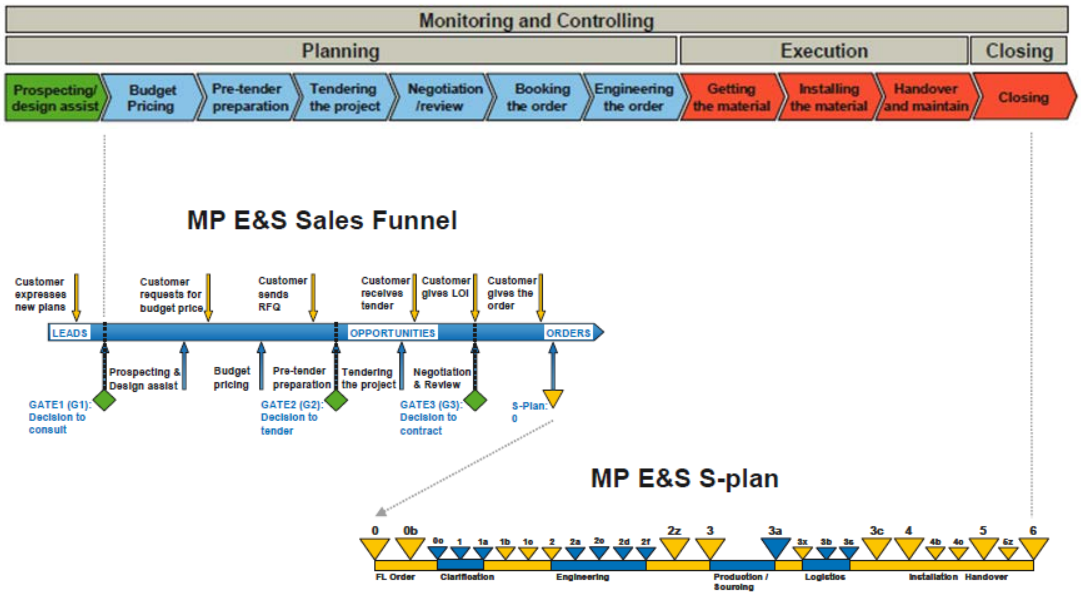
Supply chain globalization, specialization as a service, integration into business processes

Change strategy, lean approach

APPENDIX 5: Supply manager's role core competences matrix

Supply Manager role's Core Competences Matrix				KONE MP core competences are composed of People, Organization, Process, Tools, Project management and Technology - special components solution creation for the complexity management. (They will enable production of high-quality, individual tailored products and the countless changes with short lead time for delivery.) The added value that MP provides its customers originates from MP own unique know-how and custom focused strategy.			
	Foundational competences			Professional competences			Occupational competences
Competence criteria sequence No	Workplace& leadership competences	Academic competences	Personal effectiveness competences	Technical competences	Knowledge area competences	Operations management technical competences	Certified occupation
1	Plan and organize						
2			Communication & collaboration skills				
3	Problem analysis & solving						
4				Technology skills			
5						Time managment	
6					Customer focused		
7					Financial skills		
8						Quality control	
9	Leadership						
10		Personal development					
11						Risk management	
12						Supplier management	
13							to be certified/testified

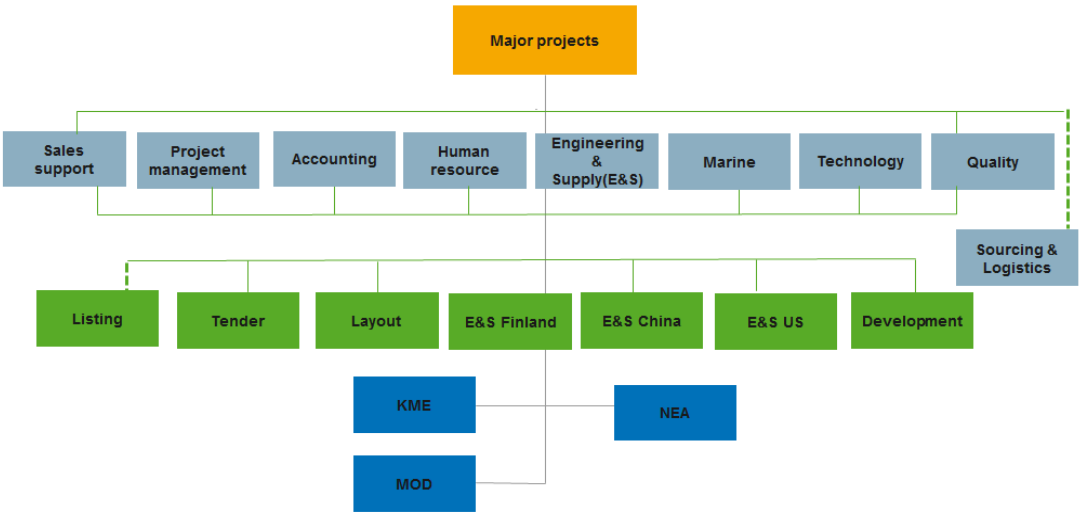
APPENDIX 6: Business process, sales funnel and S-Plan



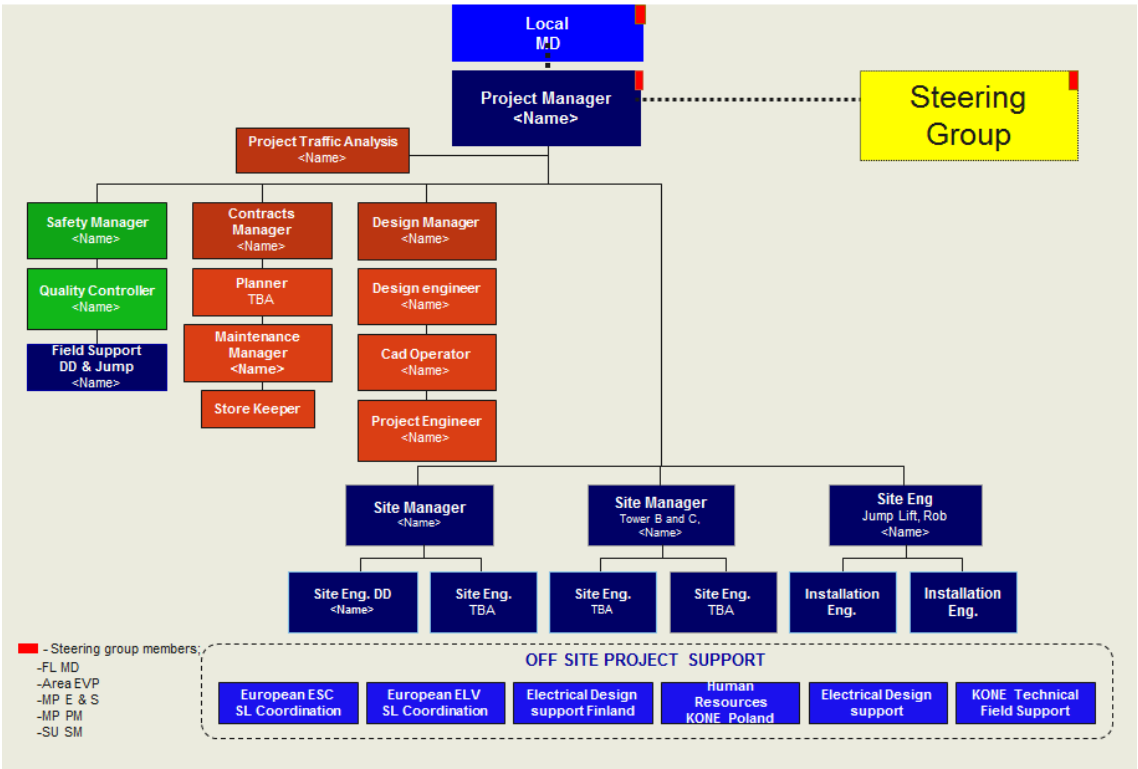
Project supply handbook. Version B 15.02.2012

APPENDIX 7: Organization chart of the research organization

7.1 Organization chart



7.2 Frontline project organization chart



APPENDIX 8: Open and close questions conducted in the interviews

The interviews are conducted by two steps: open questions and close questions. The author firstly started with the interviews by open questions for the interviewee to have a boarder view of the problems in his role in our delivery chain process. After that, the author did the conclusions with close questions by prioritizing the key problems for development.

Sequence No	Open questions	Close questions
1	According to S-Plan, how to improve supply manager's role for a full supply chain?	Should frontline project manager be responsible for CSP?
2	What are the problems and challenges in your role?	Shall we take over the CSP issuing and update if frontline cannot management CSP?
3	Frontline didn't manage CSP well enough, what should we do?	Any detailed suggestions on how to manage qualified CSP? Criteria?
4	What are the challenges in your frontline as a project manager? What are you expecting most from supply line?	What the correctness percentage for tender quality should be? And what correctness for CSP?
5	Did our customer solutions team work well? Do they support your tender team enough? What are the problems?	Questions: when do you think it is the right time to transfer the project to supply line? Any detailed proposals in time, responsibilities, documents (CSP, tender)? Metric or figures also preferred.
6	How is the tender quality? How to improve?	What are the core tasks that you should focus on as a supply manager?
7	How to improve the order check quality?	What are the tasks you think that supply engineer could do instead of you supply manager?
8	What about the most challenges in your project supply management by your good experiences on focusing your core roles and non-core roles, how should we re-organize/possibly outsource and remove the wastes? Please also give the proposalsalso for development.	What non-core role should be removed away from supply manager's role? To supply engineer or outsourcing?
9	What and how to re-arrange and improve your layout team for competence and efficiency?	Do you think it is a better way of working by pairs, supply manager and supply engineer? What are the advantages?
10	What's the big problem with tender that affects your supply manager's role? How to improve?	What are your wishes for development with your supply manager's role in details?

11	Any detailed proposals for tender improvement?	Do we have too many bosses that caused inefficiency in work? How?
12	How make the order transfer from tender a successful one? What are the challenges now?	How to re-organize the project team more efficiently? What are your specific ideas?
13	How do you use your time in your project? Or how much are they in different delivery phases?	What roles can possibly be outsourced? Any risks?
14	Why some MP employees are not well motivated? How to motivate them?	Should we directly contact with customers and copy frontline for notice on some urgent problems?
15	What's the main problem in communication and collaboration with UK project?	Should always frontline between all the businesses?
16	How should we re-arrange your role for efficiency?	What are the most challenges in your supply manager tasks? Please name them and tell the reason why?
17	What are the listing challenges in your project management?	How about tender engineer, are their role responsibility clear? What should they support more for supply manager's role or how should re-arrange their role for project team need? Is it better that tender engineer and VPN engineer are the same person for efficiency and quality control?
18	How to improve the integration work with other departments or other teams internally?	What kinds of actions needed to control listing and engineering correctness and quality?
19	On listing work, what's the problem with the system? How to develop it so as to satisfy the users in listing work?	Material management and logistics role responsibility are not clear either, should they be divided by business areas and better collaborated with MP supply manager?
20	How to reduce manual work in using SAP system and improve work efficiency?	What actions will you do to motivate the visual designers especially from NHE and NCD in Hyvinkää factory?
21	For accounting, what are the difficult parts in daily work? What kinds of improvement required for development?	What part of development is most demanding for your accounting purposes? Why?
22	Any problems with manufacturing and production project phase?	Any resources missing? What kinds of are missing?
23	How about installation, any problems with site?	What plans and actions should MP management implement for openness towards feedback for continuous business improvement?
24	Any development proposals for project close meeting?	Are you waiting for any development results by all of our proposals to MP management? If yes, what? If not, why?

25	According to your own supply management experience, what are the problems from user’s point of view? E.g. scheduling, update, follow-up	What are the most important skills you think that a supply manager should have?
26	How to communicate and collaborate with customer, frontline efficiently?	Do you get enough support from other key roles as a supply manager? If not, what is the most reason? If yes, what and from whom?
27	Why competence is important for a supply manager's role?	Should we have a better reward system for MP to motivate people for development ideas and proposal? What kinds of could be?
28	What are the most important criteria in supply project management?	Are you happy and satisfied with your role now? What is your target role?
29		What skills needed for your role as a supply manager? What should be developed?
30		Are you expecting that MP will make the decisions for change according to our feedback? What changes are they?

ABBREVIATIONS AND NOTATION

ACI	Application Continuous Improvement. Custom technical documentation, environment built on Microsoft Share point technology
CRM	Customer solution manager, technical support for sales
CSP	Core specification. Project elevator technical specification
EngCalc	A tool for calculation of elevator hoisting function
DIR document	Document Issue Register. List of submitted project approval drawings and documents
DG Plan	Delivery Group Plan. Material delivery plan and schedule
FL	Frontline. KONE sales company, typically country specific
MP E&S	Engineering and Supply Unit of the research organization
Must-win battles	Development programs for achieving business strategy goals in the research organization
NEB	New Equipment Business. One of the business lines
PM	Project Manager in Frontline
SEB	Service Business. One of the business lines
SE	Supply Engineer
SIGN	Signalization
SL	Supply line, serves FLs with material deliveries, engineering and customer service
SM	Supply Manager
S-Plan	Process descriptions of Customer Delivery
VariPDM	Web database for documentation
VPN	Variation price notification. A) SL transfer price with variation additional costs b) single variation cost
VSM	Value stream mapping. Analysis method to identify wastes in production or business operation, and for efficiency
Visual Designers	Car, Signalization and Door designers of the research organization

LIST OF FIGURES AND TABLES

ACKNOWLEDGEMENTS

I have had a dream to become the Principal of a middle school, being a successor of my father, but now I am in a real world of my Master thesis writing, which is my another dream to get a degree in Master of Business Administration, for academic study.

From Language study to Information Technology in China, Finland and exchange student in the US, and now part-time study in Business Management, which will definitely make me richer in diversity of knowledge and multi-cultural competitive advantage, lifelong learning and take the knowledge advantages into my life and work.

Firstly, I gratefully thank my thesis supervisor Jarmo Levonen, Principal Lecturer from HAMK. For the research organization, many thanks to Sami Kekonen, Director of full chain delivery, and many thanks to my thesis mentor, Tero Salmela, Development Manager of supply process, who consulted, supervised and worked also for providing a lot of data for my thesis. Meanwhile, many thanks give to all colleagues who have supported me, head of human resource, supply managers and other managers and experts. Without them I cannot make this, especially I have got a lot of valuable data for my thesis and also for other projects development references and further research in the future.

The thesis is meant for my Master Degree program study, at the same time it is also a development project on supply manager's role for the research organization. I enjoyed the work very much because it is a learning process for me too, to explore the world of supply manager's role in the core business processes of supply chain excellence.

The last but not the least, I thank my family, my lovely daughter and my dear husband who have also supported me so much.

Jianhong Kananen 2014